English for Korean Postgraduate Engineering Students in the Global Academic Community: Perceptions of the Importance of English, Skills-based Needs and Sociocultural Behaviours

By

Inyoung Shin

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Abstract

This study aims to investigate the perceived needs for English of Korean postgraduate engineering students in an academic community. It questions the broader issues of needs in English for Academic Purposes (EAP), encompassing the importance of English, skills-based needs in English and sociocultural behaviours. In raising these issues, this research uses a comparative framework. I collected data in two contexts, the United Kingdom and Korea, to examine the perceptions of Korean postgraduate engineering students themselves and subject lecturers by using both questionnaires and semi-structured interviews.

The research showed that the current global world order has strongly influenced participants' perceptions in both the Korean and the UK academic contexts. The role of English was considered as being pivotal for communication, and a balanced command of English skills integrated with academic practices of the engineering discipline were seen to be required for students. However, there was a diversity of views among participants regarding the sociocultural behaviours which characterized the emerging global academic community. Participants in Korea tended to be self-critical of their own academic culture. In the United Kingdom, students struggled, resisted or attempted to reshape the dominant academic culture, while lecturers were frustrated by students' non-participatory and non-interactive attitudes in the community of practice.

Considering the demands of participation in a global academic community leads to the conclusion that Korean engineering students need to be equipped with multiple skills and discipline-specific literacy, forged to meet the needs of globalization. Students should also be expected to have critical awareness, sociocultural sensitivity and flexibility, in order to be genuine members of the engineering academic community. Finally, this thesis discusses the implications for upgraded EAP programmes adapted to the needs of Korean engineering students in the global age.

I hereby declare that, except where explicit attribution is made, the work presented in this thesis is entirely my own.

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Transcription Keys and Punctuation

...	Material removed by me for clarity or brevity
[Square brackets]	Material added or clarified by me
Italics	Used for emphasis of words or phrases
"Double quotes"	Used for quotations
'Single quotes'	Used for distancing, to indicate that I am problematizing a term in some way

List of Abbreviations

CBTTOEFL	Computer-based Test, Testing of English as a Foreign Language
CLT	Communicative Language Teaching
College K	College in Korea
College U	College in the UK
EAP	English for Academic Purposes
EEP	English for Engineering Purposes
EFL	English for Foreign Language
EGAP	English for General Academic Purposes
ELT	English Language Teaching
EOP	English for Occupational Purposes
ESAP	English for Specific Academic Purposes
ESL	English for Second Language
ESP	English for Specific Purposes
EST	English for Science and Technology
IEE	International Engineering English
IELTS	International English Language Testing System
KL	Lecturers at College K
KS	Students at College K
KATE	Korean Association of Teaching English
KATEFL	Korean Association of Teaching English as a Foreign Language
L1	First Language Learner of English
L2	Second Language Learner of English
MOE	Ministry of Education
M.Sc.	Master of Science (M)
PG	Postgraduate
Ph.D.	Doctor of Philosophy (P)
Post Doc	Post Doctoral (PD)
Q	Participants who replied to Questionnaire open-ended questions
REU	Ratios of English Use (%)
SCI	Science Papers Citation Index
TEPS	Test of English Proficiency
TESOL	Teaching English to Speakers of Other Languages
TOEFL	Test of English as a Foreign Language
TOEIC	Test of English as International Communication
UG	Undergraduate
UL	Lecturers at College U
US	Students at College U
WTO	World Trade Organization

Preface

This needs analysis originates with my own academic experience as an engineer. I was a science and technology student and researcher on chemical engineering at a research institute in Korea in the 1980s. English was a required subject for general education in the first year of my university life, but the course was neither motivating nor attractive. This was because the course was totally remote from my academic interests and purposes, which were the main reasons why I desired to study English. I did not understand why I was being forced to spend precious time and energy learning it. There was a need for some renovation in the content and curriculum of the English course to make it interesting to science and technology students.

Now the importance of English and the demand for it have increased dramatically in the world. The forces of globalization in the economy, society, technology and culture have left little room for doubt that knowledge in English is a rich and important global resource. For second language learners, English is no longer a luxury but instead a major concern in all aspects of an increasingly globalized existence, allowing us to live together and communicate with each other according to our needs and purposes. Given this increased global concern for English language education, my curiosity was aroused regarding the question of how other Korean engineering students and faculty perceive the English needs of the students in relation to their chosen academic discipline.

Naturally, the national context in which most first or second year Korean university students study English as a required course is Korea. In most areas of study in Korea, English plays a major role in fulfilling the purpose of international communication. Likewise, for Korean engineering students, English is a crucial instrument for communicating with foreign academics and intellectuals as well as for developing engineering knowledge. In recent years, the issue of English language teaching in Korea has become politically and educationally lively enough to warrant comparison with a kind of sickness or 'fever' (Jeong, 2004). Nonetheless, the levels of English teaching in Korea still lag behind those required to produce

students of engineering and other subjects who can meet reasonable international standards of English competence, particularly in terms of effective communication skills and sociocultural behaviours (Templer, 2002) within the engineering academic community.

At the tertiary level in Korea, most English education has been based on a generalized level of English, regardless of students' particular needs or purposes. In other words, specific English teaching approaches grounded in the needs of particular groups of students have been rare (Gulliver, 2001; Lee, 2003). Accordingly, even though Korean engineering students require English as a vital instrument for international communication, ensuring strong ability in English related to each specialized area, many have still not received an education that focuses on their specialized contents, skills and sociocultural behaviours. This unhappy situation makes Korean engineering students vulnerable. They sometimes experience frustration when trying to manage important tasks while using English in international academic societies without the experience of an English education that has been directly geared to their subject. They need specialized English knowledge; however, the current educational system is still inadequate as a means for educating them appropriately. There is as yet no clear understanding or in-depth analysis of how to address these needs in academic contexts.

For these reasons, language teaching at the tertiary level in Korea needs to become more responsive to those needs of learners that arise when they take part in various social practices in the global academic community. In order to respond in this way, it is necessary first to analyze the perceptions of Korean students and subject lecturers concerning students' needs in English as members of that global community. This research compares these needs, regarding how they encounter globalization in two academic contexts. The first is the tertiary institutional setting in the UK; the second is the tertiary institutional setting in Korea. By means of a reflective, systematic and comparative investigation, involving my own viewpoint as an insider, this research sets out to trace the needs of Korean engineering students, as students and lecturers see these in their academic community in the era of globalization.

Chapter 1. Introduction

1.1. Globalization and Needs in EAP

Today the demand for more specialized language teaching is widespread. As the conditions under which language learning takes place have changed in the current era of globalization, learners' needs and purposes have diversified (Tudor, 1997). For this reason, attempts to identify the needs of learners are considered as a key stage of the planning of English language education (Dudley-Evans & St. John, 1998; Robinson, 1991), particularly in the area of English for Academic Purposes (EAP).

This thesis aims to investigate the perceived needs in relation to English of Korean postgraduate engineering students in the light of globalization. Since they wish to participate in the academic work of engineering in the global community while engaging in their local contexts (Wenger, 1998), Korean engineering students, as a specifiable group, have distinct purposes of learning English (McDonough, 2005:57). This is mainly because English is the *de facto* international language, particularly in the science and technology field. During their academic lives, Korean engineering students need to accumulate disciplinary knowledge in English-medium academic settings, identify themselves as qualified academics, and participate actively in their international intellectual community. For most of these students, English tends to be an obstacle or burden while studying their engineering subjects, although English is a main medium of international communication in engineering.

In aiming to help a specific identifiable group of students, this study locates itself within the field of EAP, a major branch of English for Specific Purposes (ESP). This is because EAP seeks appropriate teaching and learning which focuses on "the

specific communicative needs and practices of particular groups" (Hyland & Hamp-Lyons, 2002:2) of people in pursuit of specific purposes and interests. Tertiary-level Korean engineering students of English as a second language are clearly such a group.

EAP researchers have made successful attempts to suggest that an approach to language learning should be based on an intellectual understanding of learners' needs for specific lexical items, rhetorical forms and genres of texts, skills and specific disciplinary methodologies. However, the argument made in this thesis is that EAP must re-conceptualize itself in order to place greater emphasis on learners' sociocultural demands related to learners' behaviours and their ways of studying in the globalized world of the twenty-first century. The underlying rationale for this new emphasis is the belief that skills and language use cannot be isolated from the culture and context of the new social movements of globalization (cf. section 3.3). EAP research should be "explicitly geared towards developing [the] culturally suitable demeanours, dispositions, and behaviours" of students at the international level (Singh & Doherty, 2004:10). Globalization also calls for new understandings of the role of English in academic contexts, as English itself "at the global level has changed rapidly, calling for further paradigm revision" (Canagarajah, 2006:22).

In line with these extended theoretical backgrounds for EAP, this thesis concerns the perceived needs of learners in terms of the *importance of English, communicative skills* and *sociocultural behaviours*, when they learn English for engineering academic practices in the global community. These triple kinds of needs are closely interconnected, with one being able to influence the other in any context. For instance, if the needs related to sociocultural behaviours are not acknowledged, a formal consideration of skills-based needs may be limited. The participants' perceptions of the importance of English may contribute to the understanding of the overall concerns of English and EAP. Accordingly, the dynamics between these inseparable needs should be considered. The sets of needs are acknowledged by me as important information and urgent dimensions for understanding the "overall needs" for English of students (Dudley-Evans & St.

John, 1998:127) and thus for establishing appropriate EAP programmes in Korea.

Following the descriptions of needs by Brindley (1989) and Hutchinson and Waters (1987), this needs analysis will focus on the wants and subjective needs of Korean engineering students, on the basis of the various participants' *perceptions*. Therefore, *needs* in this thesis include concepts of expectations, necessities, feelings, problems and gaps mostly based on learners' and subject lecturers' subjective perceptions, in terms of the importance of English, skills in English and sociocultural behaviours in their academic contexts. Therefore the thesis does not consider those target elements of needs, such as register, discourse, genre, text features and writing tasks, which focus on the static aspects of the learning situation.

In this study, the concepts of *skills* in English are divided into language skills and study skills. *Language skills* refer to four skills: listening, speaking, reading and writing, which are used regardless of academic situations. *Study skills* include wide-ranging sub-skills, such as abilities, activities, strategies, techniques and personal aspects of efficiency which are mostly used in academic situations in the community (cf. section 4.2.1). The term 'skills' in English is nowadays contentious and challenged by the concept of 'academic literacies' (Lea & Street, 2000) which is supported by this study (see sections 4.2.1 & 7.3). Nonetheless, this study uses the term 'skills,' simply because engineering academics may be more familiar with the term and the concept of academic literacy incorporates the notion of skills (Lea & Street, 2000).

This study discusses *sociocultural behaviours,* which indicate broad meanings of the attitudes, approach to study, expectations, norms of interactions, value systems and power relations, expected of members in the academic community. The notion of sociocultural behaviours encompasses both *local academic culture* and *disciplinary culture* adapted from the terms of Flowerdew and Miller (1995) (cf. section 4.3.1). As learners may learn a language in order to participate in practices which are affected by their whole social situation, context and culture, this thesis considers *academic practices* in the academic community (cf. section 3.4). The

academic community is assumed to exist in a global dimension. Therefore the *global academic community* refers to the engineering academic society as sharing purposes, values and a *disciplinary culture* worldwide, while the *local academic context* refers to the academic society which shares certain norms, values, tradition and *academic culture* in peripheral settings (cf. section 4.3.1). [I will provide more detailed descriptions and definitions regarding concepts and research on skills and sociocultural behaviours in section 4.3.] In this thesis, 'Korea' refers to South Korea. Here, 'second language learners' (L2) means non-native English speakers who are learning English as a second language, whether in ESL or EFL contexts. In probing the perceptions of needs of learners who wish to be members of the global academic community, I attempt to analyse them by reference to two local academic contexts, those of the UK and Korea, with comparative perspectives which I set out next.

1.2. A Contextual Comparison in the Era of Globalization

In the investigation and research of educational phenomena in specific settings, comparative methodological studies tend to prevail (Lee, 2003). Many researchers have stressed the role and importance of contextual comparisons. For example, McLean (1992:1-3) asserts:

> Cross-national (-contextual) comparisons can extend the boundaries of educational possibility by helping understanding of what is unique to one culture by contrasting it with others... Comparison can extend knowledge in a systematic way and so can enlarge understanding. As a scientific or scholarly activity, comparison of social institutions and behaviours has well established methods.

Comparative research thus aims to provide valuable cross-cultural descriptions, extending and deepening the understanding of both 'unity and diversity' (Spelman Miller & Thompson, 2002) of a social phenomenon, which offer useful and systematic information relevant to an appropriate approach to English language education.

Many English teaching practitioners have attempted to analyze and understand the needs of students in a specific context (Benesch, 2001; Dudley-Evans & St. John, 1998; Tarone & Yule, 1989). This is because, as Byram and Grundy (2003:1) mention, learners are viewed as having "specific relationships with the language they are learning, relationships which are determined by the sociopolitical and geopolitical circumstances in which they live." "The pedagogic decisions" are seen as taking place "in a particular institution with a particular group of students during a specific moment" (Benesch, 2001:xvii)

However, in these times of "accelerating interdependence... and global integration" (Held & McGrew, 2003:3) [For detailed descriptions of globalization, see section 3.1.], examining the needs of learners by comparing participants' perceptions concurrently in different domains of English language teaching, which is the aim of this thesis, might produce richer data and a deeper understanding of learners' needs. So far, "much of the literature on globalization seldom specifies the spatial referents for the global" (Held & McGrew, 2003:4). Recently, researchers on EAP have realized that a wider contextual description is important, and the broadening of scope may present us with a powerful way of looking at situations (Ganobcsik-Williams, 2006; Holliday, 1994; Kennedy, 2001; Prior, 1995). They point out the limitations of a narrowly designed needs analysis. It has been argued that EAP teachers need to adopt wider roles in the 'global framework' (Kramsch, 2002). This is because "the EAP context is complex, and solutions to local EAP problems are not easily resolved," due to the rapidly changing situations of globalisation in all parts of the world (Kennedy, 2001:41).

Therefore, I wish to argue that, by examining and comparing the needs in English of Korean engineering students in two separate contexts, the UK and Korea, we may achieve deeper understanding of certain important phenomena. This thought has led me to the analysis offered here, which compares the needs of Korean engineering students in Korea and the UK. In Korea, English is used mostly for international, as opposed to intra-national, communication (English as a Foreign Language: EFL). In the United Kingdom, English is the overwhelmingly dominant language (English as a Second Language: ESL). As we shall see in section 3.5,

however, the discrete definition of ESL and EFL contexts can be a false polarity in a globalized age.

In comparing non-native learners' needs in the different contexts, this research focuses on the broad aspects of the two situations, including similarities as well as differences between them. Groups of students who communicate with each other and work together in the global academic community tend to share to a certain extent emerging similar needs, regardless of their locations. In this respect, Block and Cameron (2002:8) have stressed the emerging "global ideology of effective communication." Widdowson's (1997:141) comment concerning the "varieties of English that have sprung up on a global scale" is premised on the concept of the changing, but shared, needs of professional and academic communities. At the same time, cultural processes of globalization may be "complex, uneven, and varied ways by people across different spaces" (Giddens, 2000 in Singh & Doherty, 2004:15), and one of the consequences of globalization is that it makes it hard to predict "how the profession will respond to them in the years to come" (Canagarajah, 2006:24).

This study therefore seeks to highlight the commonalities and differences which students and lecturers perceive in relation to the needs of Korean students in English in two institutions. [I will call the university in Korea College K and the university in the UK College U.] The expectation is that this approach to needs analysis will offer some widely applicable ideas concerning desirable EAP programmes for Korean engineering students in Korea. At the same time, the broad set of ideas will enable EAP practitioners to be more flexible and dynamic in designing and evaluating EAP curricula in Korea.

Therefore, this study attempts to examine needs in English in both contexts by conceptualising the role of English, skills and sociocultural behaviours in a way that fits with the age of globalization. The purpose is to increase awareness and understanding of the needs of engineering students in the global academic community as those needs are perceived by the participants themselves.

1.3. The Perceptual Comparison of Needs

This study focuses its attention on the concept of *perceived needs*. That is, it will speculate about and compare how the students and lecturers perceive the needs, difficulties and challenges which students experience when using English to study engineering in the two contexts. Perceptions include individuals' psychological aspirations and hopes problematizing target situations (Benesch, 2001), and are grounded in the situated social contexts (cf. section 4.1.2).

So far, EAP's pragmatic tradition "has excluded questioning requirements or engaging" students' and lecturers' subjective perceptions, and has caused "the lack of attention to social issues," accepting dominant ideologies as target situations (Benesch, 2001:107). However, some EAP specialists (Benesch, 2001; Christison & Krahnke, 1986; Myles & Cheng, 2003) have realized that the investigation of those subjective perceptions is an important prerequisite for the understanding of students' social issues and identities (cf. section 4.1.2). By such investigation, EAP can attempt to "help learners gain access to ways of communicating... in particular communities... moving away from an exclusive focus on text features to ways of understanding the social processes" (Hyland & Hamp-Lyons, 2002:9).

Within the social movement of globalization, postgraduate engineering students may have special aspirations, orientations and dilemmas in studying their own subjects in English. They might gain new perceptions for managing the cognitive and cultural dilemmas in their local academic contexts as they seek to be members of the global academic community. Hitherto, subjective needs have often been hidden and disregarded in institutional systems. This thesis aims to highlight students' own perceived needs and the sites of their struggles in using English for their engineering study rather than considering these learners as passive beings controlled by "the result of particular political and ideological systems" (Tollefson, 1995 ed. in Kennedy, 2001:34). Information obtained from students and lecturers reflects their perceptions and priorities regarding what should be taught and how it should be taught. Such information may also reveal learning preferences, sociocultural difficulties and institutional problems.

The point to be made in this respect is that the perceived needs for students in the UK and Korea are not totally unrelated to each other. That is, Korean postgraduate engineering students in the UK often take on the role of ex-students for Korean engineering students in Korea. This is because most Korean students first study in Korea before going abroad to study, although some students are immigrants studying in the UK from a young age (cf. section 5.2). The group of students in the UK can thus provide insights into and anticipate the wider needs of the students in the Korean context. As the main sources for comparative needs analysis, both current learners and former students are important (Christian & Krahnke, 1986; Dudley-Evans & St. John, 1998; Robinson, 1991).

Another comparison which this study develops is the perceived needs of the students from the points of view of the students themselves and the engineering lecturers in the relevant institutions. Each group requires an understanding of the opinions of the other. Faculty as established academics in engineering have had academic experience, and may have "their own fairly well-defined views regarding what constitute the elements" of skills and behaviours in the fields in which they teach (Lea & Street, 2000:38) required for students to be members of the global community. Nonetheless, the expectations of the university faculty and the consequent needs of students tend "to be implicit, not always clear to the students, and perhaps not even apparent to the instructors themselves" (Ferris & Tagg, 1996a:32). Although the lecturers in the two contexts work in the same fields and share the same disciplinary conventions, the two groups may diverge insofar as they have distinct local cultural expectations embedded in their sociocultural backgrounds and preconceptions.

The perspectives of each group may be similar or contradictory, yet each is important. For this reason, rather than only examining one group's views of the needs of students, a simultaneous consideration of the subject lecturers and students' views in both contexts can offer a clear idea to EAP practitioners when formulating an appropriate EAP curriculum for Korean students.

1.4. Research Design

The four groups of participants, who are from two institutions (College K and College U), major elite institutions in Korea and the UK (see section 5.1), are summarised in Table 1.1. Each group is positioned well to understand the others, allowing a dialogue on the issue of dilemmas and challenges in English of Korean engineering students. Although all the participants share similar academic interests and are involved with academic practices in engineering, they play different roles within this needs analysis.

The Korean engineering postgraduate students at College K (KSs) are participants who have their own perceptions of their needs in English in the Korean context. Their views may provide direct information to guide better support for EAP programmes in Korean universities. According to the demographic data contained in the questionnaires (cf. Table V in Appendix I), many Korean engineering postgraduate students at College U (USs) were formerly students in Korea, who are experiencing different expectations for their use of English in the UK academic culture. Korean students intending to relocate to an English-dominant country will be helped by having at their disposal some knowledge of the experiences and difficulties of ex-students in the UK environment in order to prepare specific skills and gain an understanding of cultural norms. As a result, USs may offer different and informed perspectives on English language requirements in the global community for KSs in Korean universities.

Most engineering lecturers at College K (KLs) have had prior experience of studying engineering in Korea as well as in English-speaking countries as non-native speaker students, and they may clearly acknowledge differences between local and global expectations. They will recognize the effects of the recent trends toward academic globalization and some of the emergent needs in English and an upgraded EAP system for their students. The final category is those engineering lecturers who have academic relationships with the Korean students at College U (ULs). Some of these lecturers used to be overseas students in the UK. As leading academics in engineering fields, they may acknowledge their responsibility for

instructing Korean students to manage complex engineering academic tasks in English and to deal with issues arising as a result of divergent cultural assumptions and expectations in the UK academic context as well as in the global community.

Table 1.1. **The Outline of the Study**

Four groups of participants in two contexts: (1) Postgraduate engineering students at College K (KSs); (2) Engineering lecturers at College K (KLs); (3) Korean postgraduate engineering students at College U (USs); (4) Engineering lecturers who have academic relationships with Korean engineering students at College U (ULs).
Sets of students' needs on which the study is focused: (1) The importance of English; (2) Needs of language skills/ study skills; (3) Needs regarding sociocultural behaviours.

In sum, this study examines and compares the perceived needs in English of Korean engineering postgraduate students in two tertiary institutions in the UK and Korea. It seeks to answer the overall question: How do students and lecturers in the world discipline of engineering perceive needs in English of Korean engineering students in the global academic community? These issues are analysed based on students' own perceptions and those of subject lecturers, being formulated in relation to three major areas (Table 1.1): (1) the importance of English; (2) necessary language skills and study skills in English; and (3) sociocultural behaviours, with reference to the UK and Korean contexts. That is, the issues are relevant to how much engineering participants value English in their academic contexts and what difficulties Korean students may encounter in relation to communicative skills and the sociocultural behaviours required in the academic community. More specifically, this study seeks to investigate the following questions:

1. *How far and why do students and lecturers perceive English as important in order to enable Korean postgraduate engineering students to succeed in academic contexts?*

2. *Which English language skills and study skills do they perceive as crucial for students, and why?*
3. *How do they perceive the problems of students' sociocultural behaviours, and why?*
4. *In all these enquiries, what similarities and differences can be observed in the perceptions of students and lecturers across the UK and Korea?*

The scope of these enquiries is limited to *engineering academic* contexts; that is, the concern of the study is located in English for Engineering Purposes (EEP) within EAP. [See section 3.6 for detailed description of the classification of EAP branches.] Therefore it considers the entire engineering area, regardless of distinctions between Mechanical engineering, Electronic engineering and others. However, it does not take fields of science and professional working contexts into account.

Both the questionnaire and the semi-structured interview are chosen as research methods, in order to triangulate findings. This approach is meant to provide a systematic and expansive set of data in a relatively short time period (cf. section 5.3). It is expected that the combination of these quantitative and qualitative methods using a variety of groups of participants will allow for a clear and reliable picture of the complex issues relating to students' needs. I will use some interview data illustratively when reviewing my literature or elaborating my arguments in Chapters 2 to 5, although my major data analyses are shown in Chapters 6 to 8.

In Chapter 2 of this thesis, the contextual background of English education in Korea that requires EAP programmes will be examined. Emphasis will be given to exploring the history of English teaching and the predicaments that tertiary institutions still face, especially the socio-political situations of Korean engineering students. Chapter 3 will examine the phenomenon of globalization in academic contexts and its influence on the role of English and EAP. It then considers the rationale for an extended EAP focus, encompassing concepts of sociocultural orientations as well as skill, as a required theoretical background in the global age.

It elaborates the notions of the academic community in EAP, and the change in the EAP context in relation to globalization. Finally, it examines the particular features of the engineering discipline and academic practices in the global engineering community. Chapter 4 will start with the development of needs analysis in the EAP domain, and argue that the study of perceived needs is a valuable resource for EAP pedagogy. It next discusses the issues of needs and theoretical challenges in terms of the skills and the sociocultural behaviours under conditions of globalization. I will argue that globalization has resulted in more unified as well as diversified needs in English in the academic contexts of engineering.

Chapter 5 includes a description of the research methodology, which encompasses research settings, participants, the design of instruments, procedure, strategies of data collection in two contexts, data treatments and analysis and research ethics. Chapters 6 to 8 present the data and discussion of the perceived needs of Korean engineering students in dealing respectively with the issues of the importance of English, skills and sociocultural behaviours. In Chapter 9, I will sum up the major findings of this study, and suggest implications for EAP pedagogy for Korean engineering students, the limitations of my study and recommendations for future study. The chapter will finally reflect on the contributions of this research to the field of needs analysis in EAP in the age of globalization.

Chapter 2. Background of the Study

As what is essential for initiating educational research is obviously a thorough understanding of the students' context of learning (Tudor, 2001), it is crucial to enquire into the sociocultural and political milieu which they come from. This chapter firstly examines the historical and contextual background and recent innovation in English education due to the effect of globalization in Korea, and points out the prevalent linguistic, sociocultural, political and academic difficulties that Korean students face when learning English. Next, the current situation of Korean tertiary institutions that require a special focus on EAP education and the dilemma of practising EAP programmes will be addressed. Finally, the particular socio-political situation of Korean engineering students will be investigated.

2.1. A Brief History of English Education in Korea

English language education in Korea began in the late 19th and early 20th centuries. During the first two decades, a direct teaching approach by native English speaker teachers was offered at Dongmoonhak as the first official English language education in Korea. It aimed at 'special purposes' training for a limited number of interpreters of English, to help government officials in diplomacy and business during the late Chosun Dynasty. As Kwon (1995:109) states:

> In 1883, as the hermit kingdom of Korea was opening its doors to Western powers, Emperor Gojong issued an order to start a royal English school to produce interpreters and to help officials in international diplomacy and trade business... At that time, the English teachers were a British electrical technician, named Hallifax, and two Chinese who were educated in American universities. Not only because they were not professional language teachers, but also because they could not speak Korean, English teaching was held in English by using the direct teaching method.

Afterwards, another school, Yookyoungkongwon, and American mission schools were also founded to teach English and other modern subjects by using the English language as the medium (Jeong, 2004). From the 1920s, under Japanese colonial rule, the trend in teaching English changed to the memorization of grammatical rules, test-taking and emphasis on reading skills. Students used English textbooks that provided grammatical analyses and explanations in Japanese (Kwon, 1995). Therefore, in Korea, the colonial legacy did not include other more effective forms of English language education, because English was transmitted through the Japanese rather than the Anglophone language system.

Since the end of the Second World War and the Korean War, as in other Southeast Asian countries, American English has dominated English education, and the American system has been introduced in the educational system for teaching English as well as other subjects in Korea (Lee, 2007). This is because the region was "made the responsibility of the USA as United Nations Trust Territories" (Crystal, 2003:55). English education started to be made available for the general public at that time, as a required subject in secondary-level schools sanctioned by the Korea Ministry of Education (MOE) (Choe, 1996). The grammar-translation teaching approach still continued to be dominant in the classroom, with teachers who had mostly been educated under Japanese colonial rule.

The audio-lingual method in the late 1960s and the cognitive approach in the 1970s attracted some interest among Korean researchers influenced by developments in English teaching in Western countries. From the 1980s, English educators started to introduce the Communicative Language Teaching (CLT) approach, and began to study actual Korean classroom contexts on the basis of empirical research (Kwon, 1995). Nevertheless, English teaching had remained predominantly a matter of general education within the secondary school curriculum, as preparation for formal tests, and tertiary education for freshmen and sometimes sophomores based on the translation approach (Kim, 2001) or for people who majored in English literature. Therefore, English education did not attract much public interest among Koreans.

From the 1990s, however, stronger demands for high-quality English education emerged in Korean society, mainly due to the growing socio-political movement of *globalisation*, Korea's open policy towards the world, and induction into the information technology society. It was strongly recognized by Korean people that appropriate English teaching and learning would support the prosperous development of the country (Kim, 1994), as English was becoming the major medium of international communication.

As a result, during recent decades the English curriculum and approaches to English in Korea have experienced a transformation aiming for more effective and productive language teaching (Kwon, 2000). As Li (1998:681) explains:

> The South Korean government has placed English learning and teaching high on its agenda to ensure that South Korea will play [a] ... role in world political and economic activities. Rather than wait for speakers of other languages to learn Korean, the government wants its people prepared to communicate in English with those who do not speak their language.

For instance, the MOE started to set up curricula based on the notion of communicative competence in secondary schools (Li, 1998). The College Scholastic Ability Test (CSAT), the major college entrance examination in Korea, was revised to assess not only grammar translation ability but also listening comprehension skills in English. The MOE also launched English education from the 3rd year in primary schools in 1997, granted students freedom to study English abroad, and expanded private English teaching institutes employing native English speaker teachers (Lee, 2003). At the same time, there have been active renovations at tertiary institutions, including the improvement of the English education programmes to enhance oral/aural communication skills, the expansion of TESOL programmes, the enlargement of postgraduate courses for the English-Korean translation profession, and the emphasis on university professors' English proficiency in lecturing in English as a condition of recruitment (Lee, 2003). These government policies were in response to strong socio-political demands for the upgraded competence in English of Korean people, due to the growing demands for communication in frequent global contact with foreigners.

Since the late 1990s, the World Trade Organization (WTO) agreement has boosted the inflow of British, American and Canadian native speakers of English and ELT materials into Korea, enriching the environment for English learning and teaching, and exacerbating the English 'fever' (Jeong, 2004). There have also been regularly presented English programmes from Anglophone countries as well as active exchange programmes in English education with Korea's counterparts in the Asian-Pacific region (Park, 2005). The English teaching context in Korea has therefore been internationalized at a rapid pace.

2.2. The Current Situations and Difficulties Faced by Korean Students Studying English

Despite the widespread adoption of new approaches and a national concern for English teaching, the majority of Korean people have suffered from discouragement and hardship as far as their proficiency level of English and English use is concerned. Even though the government has introduced a series of new measures to improve the situation, the level of proficiency in English is still unsatisfactory among Koreans, as Choe (2004) reports:

> As it struggles to make a name for itself in a world... community dominated by English, the country falls well below international standards for English proficiency.

This indicates that the teaching of English seems to function ineffectively in producing students, who reach reasonable standards of English proficiency expected for the global community, in spite of years of instruction from primary through tertiary education. Postgraduate schools frequently complain that new students are unable to derive meanings from required texts written in English, so that the classes revert to translation exercises. Companies observe that they have to re-educate new workers to bring them up to the levels in English competence required for the job. When Korean students attempt to study in Western countries, their communication problems are often severe (Digital Chosun, 2006).

When levels of English proficiency among countries are compared by using mean scores in the Computer-based Test, Testing of English as a Foreign Language (CBT TOEFL), which measures the capability to perform academic work in English in American universities, the average scores of Korean students are low. They ranked merely as 93rd among 147 countries worldwide in 2004-2005 (Digital Chosun, 2006), although it is arguable whether in fact the scores of TOEFL indicate the genuine English communicative competence of students (see section 2.3).

A number of publications have reported on the obstacles to implementing appropriate English education in Korea (Cho, 1998; Jeong, 2004; Kim, 2001; Li, 1998; Park, 1999). These include a test-oriented English learning system, a strong bias toward teacher-centred English instruction, the lack of exposure to English with no environmental support, English native speaker lecturers' lack of teaching qualifications (Kim, 2001), and the over-work, stress and lack of English competence of non-native speaker teachers (Jeong, 2004).

To make matters worse, the open policy and the extended chances of exposure toward the outside world have increased the extent to which Korean students face linguistic, communicative and sociocultural conflicts in global contacts in academic or professional sectors. Such encounters seem to cause students to internalize unconsciously negative perceptions about their own identity, their social and educational system (Lee, 2007), their English competence, and the academic culture in Korea (cf. Chapter 8).

The factors which create difficulties in teaching and learning English apparently leave most Korean learners struggling to acquire English competence in academic and professional settings, even though they recognize the importance of English as an international language in the era of globalization. These deficiencies in English education prevail at the tertiary institutions in Korea, which I will focus upon in the following section.

2.3. English Education and the Needs for EAP at Korean Tertiary Institutions

The majority of English education programmes at universities in Korea target general English competence, regardless of students' subject areas and interests. These English courses have provided instruction to improve general reading skills and some oral communication skills, typically for freshmen and sometimes for sophomores, as part of a general liberal arts educational curriculum. Based on teacher-centred instruction, the English teaching approach normally includes "accurate translation of the formal structures of the text, rather than the direct extraction of meaning from the text" (Kim 2001:10) for students at lower levels, or reading comprehension skills such as skimming and scanning skills on the basis of general topics for advanced learners in English. Although the programmes have aimed to aid students to fulfill expected tertiary academic tasks, courses have not yet been fully developed to offer English programmes at specific levels, with reference to students' subjects, interests or needs, with the exception of a few universities.

Accordingly, most of the students apply only a general knowledge of English to manage their particular subjects in English by themselves, for instance in the academic writing and oral presentation skills expected in their disciplinary community. This situation has often generated discomfort and dissatisfaction with their practices whenever they need to use English in their academic situations. I will argue that there needs to be a mediator to connect general English knowledge with specific English use for real academic tasks in the disciplines.

In acknowledging the demand for educational renovation in relation to globalization in Korean universities, the Ministry of Education (MOE) launched a project, *Brain Korea 21 (BK 21)* in 1999, which aimed to establish globalization as an emerging priority for Korean higher education. The tasks which Korean higher

education has to fulfil to achieve international academic status were described (Templer, 2002:128) as follows:

> Among the BK 21 objectives, universities seeking financing through the program are expected *inter alia* to encourage publication of articles in international academic journals (primarily in English), publication of Ph.D. theses, lectures conducted in a foreign language, increased international collaboration, graduate school students' long term overseas training, participation of professors from abroad in thesis examination, credit exchange programs with foreign universities and globalization of academic journals in a given field.

Naturally, each university began to acknowledge, much more than before, the importance of communication in English for particular disciplines, in order to seek funding from the MOE. Science and technology was the most prominent area for this. As a result, several universities specializing in science and technology, such as Korea Advanced Institute of Science and Technology (KAIST) and Kwang-Ju Institute of Science and Technology (KJIST), began to offer lectures in English on some science and technology subjects, to encourage more foreign students and lecturers to study. KJIST has attempted to offer all subjects in English to postgraduate students (personal communication), and the academic departments of KAIST, which had increased English-medium lectures since the 1990s, have started to offer all lectures in English to undergraduate freshmen (KAIST website and personal communication). At Yonsei University, about 50% of science and technology subjects were offered in English in 2005 (personal communication). Although the majority of lectures and internal communications in most universities are still provided in the Korean language, the number of English-medium lectures seems to be increasing, especially in the universities specializing in science and technology.

Given the current expectations of the high English proficiency which tertiary-level students require to participate in English-medium lectures and to fulfill tasks at international standards, EAP may be an inevitable choice for equipping students with such proficiency. This is because EAP seeks to meet the specific needs and purposes of learners (Dudley-Evans & St. John, 1998). Such relevant EAP

provision motivates students to learn English efficiently by accommodating particular skills and conventions for communication, which may enable them to access subject knowledge and resources (Kennedy, 2001) and to be qualified members of the global academic community.

The necessity and development of EAP education at Korean tertiary levels have been suggested by several researchers (Gulliver, 2001; Lee, 2003; Templer, 2002; Yoo, 2000), in acknowledging the roles of English as the international language in academic and professional areas and as an essential communication tool for students to participate in the global communities of practice. Given that the ultimate aim for learning English is to communicate and participate in their academic practices in international domains, I argue that if students are exposed to specialised EAP approaches in Korean universities they may be better prepared to study in the global era as a result of enhancing both their English and their subject knowledge. EAP should enhance students' discipline-specific skills, academic conventions and behaviours encountered within their study areas. Such courses would allow students to achieve their own purposes and their aims in the study of their subject, and to be more proficient English users in their academic community. Some measures to establish appropriate EAP programmes in Korea are envisioned, as Templer (2002:139) notes:

> Inventive appropriate experimentation in innovating for EAP/ESP in graduate education in the region will likely become a growing wave of the future... among its scientific and other elites. Prudent innovation to integrate creatively a flexible geometry of advanced EAP/ESAP options should evolve into a top priority in Korean graduate schools over the coming decade, as they tap into developments in content-based ESL instruction across the globe.

In view of the internationalization of universities and of the research in world-class and regional centres of excellence, it is crucial for Korean students to become proficient communicators within their disciplines with a solid content-based English instruction (Gulliver, 2001). Gulliver (2001), however, notes 'a striking shortage' of EAP courses at most Korean universities, and stresses 'the pressing need' for a new array of appropriate EAP courses.

Despite all these suggestions, the provision of EAP remains uncommon in most universities in Korea, because of various contextual obstacles and dilemmas. As a major reason for this, most English teaching and learning is oriented toward preparing for formal examinations. For example, the Test of English as International Communication (TOEIC), which includes a section on business English, is popular in Korea, because Korean companies usually require candidates to submit certain TOEIC scores (mostly 600 to 900) as a job qualification. Students who want to study in Western countries take either the International English Language Testing System (IELTS) or the TOEFL. Within Korea, Seoul National University has developed the Test of English Proficiency (TEPS) since 1998 (Digital Chosun, 2000).

Certain scores in these formal examinations are considered as crucial qualifications for entering universities, being employed in companies, or studying in English-speaking countries. Accordingly, most students are keen to acquire high scores in the examinations for instrumental reasons, to use as evidence of English proficiency. Because of the extremely competitive university entrance and job markets, "English education in Korea seems to be 'English for Specific Tests' rather than English for Specific Purposes" (a presenter's comment at the 2004 KATEFL conference in Seoul).

Although these examinations encompass small-scale subject content areas, they are remote from targeting actual proficiency in English according to students' specific purposes and contexts. Students are hardly able to gain communicative competence in the kinds of English that are required in their specific academic or professional contexts, despite high scores gained in those examinations. English learning undertaken only by cramming for examinations focusing on grammar and general competence does not seem desirable, because its efficiency is obviously limited and students may quickly forget short-term gains in English knowledge (Rose, 1999). The examinations may "distort students' perceptions of the role of language use in academic performance" (Turner, 2004:97). Students may not properly develop the particular communicative skills and genres which are crucially required for adequate communication and social engagement in their disciplines (Hyland, 2000).

Recently, therefore, one of the automobile companies in Korea has decided to lower the criteria of TOEIC scores for the recruitment of engineers from about 900 to about 600, because new employees who had achieved high TOEIC scores had not been able to apply their English to real working situations (personal communication with an automobile company manager in September, 2004). It seems that English instruction which only targets preparation for the formal tests does not allow students to acquire the English competence needed for particular academic or occupational settings. The teaching and learning of English should aim to facilitate communicative competence as required in students' particular subject areas and working contexts.

Another reason why EAP has not been focused on much in Korean universities is because the quality of English education up to secondary levels is generally very low (Lee, 2003). As a result, the level of students' English proficiency may not meet the threshold level of English for EAP programmes, although high English proficiency is not formally a necessary condition for students to take the EAP courses. General English education has thus still to be provided at the tertiary level. Moreover, students' level of proficiency and aptitude in English are very diverse, even among students who are studying the same subjects in the same university. This makes it hard for English practitioners to practise EAP in classrooms in Korea.

Korean students may not have a strong awareness of their urgent needs to acquire EAP, because most university subjects are still available in Korean. As exemplified in a case study of the POSTECH Live-in English Programme at Pohang High-tech University (Cho, 1998), engineering students are normally forced to focus on the short-terms goals of managing the pressing tasks of their subject areas. They are unaware of the long-term goals of English provision. They tend to postpone studying EAP until, for example, they need to write a thesis in English for graduation or to present proceedings at international conferences.

In addition, practitioners with a solid EAP background and qualifications for teaching EAP are very rare, and appropriate teaching materials are also deficient. In recognition of the need for EAP courses in Korea, institutions may search for EAP

specialists. Most English teachers, however, believe that it is challenging to teach EAP (Johns & Price-Machado, 2001) in Korean universities.

Despite some suggestions for co-operation between subject-area professors and EAP instructors (Gulliver, 2001), team teaching is limited. This is because subject teachers barely acknowledge the existence of EAP courses and are not cooperative with EAP practitioners (Kim, 2007). In the university curriculum, EAP courses mostly operate as additional courses with subordinate roles, rather than as mandatory courses. In these circumstances, English education at the tertiary level has been strongly inclined towards EGP, supporting general English competence. Nonetheless, more extensive and appropriately designed EAP programmes grounded on a thorough investigation of students' situated needs are called for in Korea, as a postgraduate student in Korea and a lecturer in the UK in the present study mentioned:

> Special English courses suitable to engineering subjects would be enormously helpful, because writing papers is totally different from writing a letter. Additionally, the pattern or style of engineering papers is rather definite. If English teachers had knowledge of the patterns and forms, it would be significantly helpful to us... Once we are at PG level, our interests narrow down only to one area... General English courses have not been helpful (KS-6).

> A specific English programme at university level in Korea would be helpful for studies in the academic community, before coming here. I think supporting and developing English ability itself in Korea is important... If they come here in UG, we assume that they understand English. We are giving no credit or penalty to those who understand or don't understand... So they have to know. If PG students, I will give them some time for 2 or 3 months. [Then if there is no improvement in English,] I will not take him and I will say that I am sorry (UL-1).

Evidently, EAP programmes are not yet sufficiently widespread and usable for tertiary students. Tertiary institutions in Korea therefore need to provide appropriate EAP programmes as compulsory courses for students to learn the particular communicative skills and conventions required for their academic communities. EAP might appeal more to students' interests and motivation to learn English, if it attempted to meet their needs and interests in their disciplines. It

should aim to accelerate understanding of the disciplinary culture which students are involved with, and to provide them with the competence to participate in practices of the global academic community.

Recently, in recognition of the increasing needs of well-targeted EAP programmes which improve specific linguistic and sociocultural competences in subject areas, a few universities have started to offer EAP courses. Ewha University, Hanyang University, Inha University, KAIST, KJIST and Yonsei University have begun to offer some programmes of EAP. I have been in charge of the English for Science and Technology (EST) programme at Yonsei University since 2005.

However, EAP in Korea seems to be still in its infancy, with extremely sparse facilities (Gulliver, 2001; Kim, 2007) compared to the Anglophone countries, countries in Latin America, the Middle and Far East and other Asian countries. As noted in the previous discussion, appropriate EAP programmes, with curricula which adequately accommodate learners' needs and purposes in their particular disciplines, are required in Korean universities. To prepare for them, a solid understanding of Korean learners' needs in English is crucial, as I aim to establish it through this study. As the effective specification of learners' needs requires an understanding of the teaching and learning context (Shamin, 1996), the sociocultural situations of Korean engineering students in the Korean context will be examined next.

2.4. The Sociocultural Situations of Engineering Students in Korea

The modernization and development of engineering in Korea have owed much to the academic foundation of Western countries. Although Korea had a distinctive and creative technology such as Geobukseon (the turtle ship), Palmandaejanggyeong (Tripitaka Koreana), Chomseongdae (the observatory), and Jikjisimgyeong (movable metal typed scripture), based on its cultural heritage

throughout five thousand years of its history, the traditional technology had not continued in use into modern times. One of the reasons is that Korea suffered from a series of serious ruptures by foreign forces. Jeon (1994 in Helaine, 1997:502, 506) explains:

> A number of foreign invasions, which decimated the entire territory, disrupted the creative tradition in Korean scientific endeavors. Each time Koreans labored to overcome these disruptions and ruptures. The history of Korean science and technology is at the same time a history of these efforts. The introduction of Western science and the efforts to systematize the traditional sciences and technologies by 'Sirhak' scholars from the 17th to the 18th centuries is just one example... However, their efforts were frustrated because of the onset of another round of ruptures by the colonial rules and the Korean War.

Since the Second World War, the scientific knowledge and technology of the Western countries have massively influenced the engineering sectors in Korea. As Wood (2001:72) remarks:

> the pressure to conform to international or Western research criteria is growing and many countries in East Asia are introducing Western concepts of research assessment.

Korean technical universities and institutions have also set up departments of science and technology following Western systems, particularly the American system. Korean engineers have striven to acquire Western technology and knowledge, recognizing that development in science and technology is crucial for the nation's civilization and modernization. The engineering departments in Korean universities adopted their academic system, functions, norms and disciplinary conventions from the models of Western technical universities. Technological growth has led to the country's rapid and substantial industrial and economic development. Nowadays, Korean science and technology have grown to meet global standards and to compete in the international market, particularly in the areas of mobile telecommunications, ship manufacturing techniques, semi-conductors, construction and the automobile industry.

A large number of students are currently studying engineering in Korea. According

to the 2003 Organization for Economic Cooperation and Development (OECD) reports, 'Education at a glance', the ratio of Korean majors in engineering, manufacture and architecture was 27.2% in 2001, which was more than twice as high as the mean percentage, 13.2%, for all OECD countries. This ratio in Korea was the highest among the OECD countries. The ratio of engineering B.Sc. graduates was also quite high compared to other countries (17.5% in 1993 and 21% in 1996), and the percentages are expected to grow (United Nations Educational, Scientific and Cultural Organization (UNESCO), Statistics Yearbook in Chosun Daily Newspaper, 2003).

However, the quality of engineering education in Korea seems to be threatened by some social factors (cf. Chapter 8). Firstly, the mismatch between the knowledge system in engineering adopted from Western countries and the Korean learning context has led the engineering knowledge basis in Korea to be vague, abstract and superficial, as a lecturer at College K describes:

> Most engineering knowledge has developed on the basis of modern Western civilization. 20th century scientific development had mostly arisen in Western countries. But we were separated from the development for a long time. As the academic cultures are different, our academic knowledge is somewhat vague and superficial. In order for us to know something clearly, that knowledge should be concrete and come from our own real situations. But, for now, our scientific academic basis is a bit weak (KL-8).

These circumstances have caused the quality and the outcomes of science and engineering research in Korea to be quite low. According to a report in which the American Science Information Institute analyzed the science papers citation index (SCI) of each country in 2004, while Korea ranked 14th in the total number of published papers (19,279 papers, 1.96%), the number of citations of papers written by Korean scientists ranked 29th (2.80) (Chosun Daily Newspaper, September, 2005). Korean engineers may need to endeavour to provide Korea-based original research and resources from their own local context in order to establish a concrete foundation for engineering knowledge in the global academic community.

Secondly, the sociocultural conflicts in terms of academic culture and behaviours are likely to be severe when Korean students research engineering with foreign academics in the global community. Korean engineers are often excluded from discussion, questioning and answering in collaborative work or international conferences, due to their reluctance to present their own arguments and introverted attitudes internalized from their home academic culture (cf. Chapter 8). Such sociocultural problems can create a sense of need to enhance their own cultural values and identity in the global community, as a Korean student in my study mentions:

> Korean people need to find a way to maximize Korean culture. We have just followed Western culture too much, which does not give an opportunity for Korean academic culture to develop (KS-Q).

Thirdly, the growth in the number of engineering students and in the scale of the engineering departments has not been accompanied by effective growth in social and national support for engineers in Korea. Owing to engineers' relatively low social status, hard working conditions, low salaries and low self-esteem, the more academically talented students tend to study medicine or other subjects rather than engineering at universities. Moreover, the number of students who returned to the home country after taking Ph.D. or M.Sc. degrees in engineering in foreign universities, such as those in the UK and US, has decreased by as much as 63% during the previous four years (Chosun Daily Newspaper, March 2007).

The shallow knowledge basis of engineering in tertiary education, the discrepancy in sociocultural expectations between the local context and the global community, and the low social status of engineers have caused serious problems within nationally-based technology manufactures in Korea. This is because global information technology and the related industries are highly competitive and fast developing. The main interest of companies is now how they can satisfy global customers with up-to-date technology, as whenever they cannot meet the demands of the global markets the companies tend to be bankrupted (Chosun Daily Newspaper, 2007). In these circumstances, the employers of companies tend to

criticize the educational system at Korean universities, because engineering employees have not been properly trained and educated to deal with engineering work in actual industrial situations.

In 1996, Korea joined the WTO, which means that only the best premier scientific knowledge and techniques are required in the global market. In 1998, when Korea suffered a major financial crisis due to fiscal mismanagement and big companies went bankrupt and received support from the International Monetary Fund (IMF), Korean people became acutely aware of the importance of science and technology for the country. Although Korea successfully overcame the financial difficulties a few years later, the prominence of engineering technology, as well as a suitable system for training creative and distinguished experts in the field, remains to be secured (National Science and Technology Council, 2000).

For Korean engineering students, engineering knowledge and information written in English have been the essential and dominant resources. In performing academic and professional work, English is a major tool for communicating with foreign engineers in the local context as well as the global community. Korean academic and professional sectors are fast becoming multinational and multicultural, as exemplified in the case of College K, where, from 2004 to 2006, the population of foreign students expanded fourfold (see section 5.2.1). International collaboration with foreign engineers has now become a norm. Therefore communication skills in English for engineers are vital (Maillardet, 2004). While in previous times just a few elite engineers used English for communication, nowadays most engineering students and professionals seem to be eagerly concerned about communication in English.

The English education provided in tertiary institutions is still severely criticized by the technological companies (cf. section 2.3). Although engineering students have studied English for many years, their ability to use English in actual engineering contexts has turned out to be very weak and marginal, and their accumulation of knowledge and research ability have tended to be limited. When engineers present or communicate at international conferences or meetings, they are vulnerable owing

to their deficiency of adequate communicative skills in English and failure to recognize the sociocultural expectations of the global community.

For these reasons, considering the socio-political and economic circumstances of Korean engineering students and researchers within both the local context and the global community, appropriate EAP programmes to equip and empower them with necessary communicative skills and sociocultural competence in English may be essential in the era of globalization. To upgrade the country's intellectual capacity in science and technology and to foster highly talented and competitive engineers to be put forward for international recognition, EAP education will be an essential and unavoidable choice for engineering students at Korean universities. Given the necessity of appropriate EAP programmes for Korean engineering students, this study intends to identify their needs in the context of globalization. The following Chapters 3 and 4 will provide the theoretical backdrop of EAP and needs analysis in the global era.

Chapter 3. The Global Academic Community and EAP Contexts

While the previous chapter presented the contextual background of this research, Chapters 3 and 4 will consider the theoretical background for this needs analysis. The main purpose of the present chapter is to address relevant issues triggered by globalization in the EAP domain, because this study aims to investigate particular L2 students' needs in relation to globalization. The chapter first explores the social change of globalization in educational sectors and discusses the dominance of English as an international language and its influence upon local academic contexts. It will then argue that EAP requires an expanded concept which encompasses sociocultural orientations beyond the typical EAP tradition, in order to serve L2 students who have special purposes in learning English in the condition of globalization. It next examines the notion of the academic community, and addresses the change in the EAP context in the era of globalization. Finally, it will investigate the peculiar nature and academic practices of engineering as a discipline which calls for the particular attention of EAP practitioners within the global academic community.

3.1. Globalization

Globalization has been a common theme of much research into sociocultural situations, although attitudes towards and viewpoints about the effects of globalization are still in dispute (Block, 2004). For example, within the literature on the subject, there is a diversity of opinion concerning the beginnings of globalization. It has been said to have originated as a pre-modern phenomenon in fifteenth-century Europe (Block & Cameron, 2002); some suggest that its emergence is connected with the phenomenon of "demand-led economics" in the

late twentieth-century (Bell, 1973 in Block, 2006:2). Although the debate around the origin and influences of globalization has been prevalent (Block & Cameron, 2002), today it has become rapid and fierce (Friedman, 2005).

Globalization is defined by Held and McGrew (2003:4) as:

> the expanding scale, growing magnitude, speeding up and deepening impact of interregional flows and patterns of social interaction. It refers to a shift or transformation in the scale of human social organization that links distant communities and expands the reach of power relations across the world's major regions and continents.

The rapid mobility of international transport systems and the increased global social relations are useful examples of this phenomenon (Becher & Trowler, 2001:2):

> a scientific discovery in a university in one country will be exploited to make a technical advance by a company based in another and put into production in yet another country, chosen for its low labour costs and offered for sale by that company's subsidiaries throughout the world.

"The convenience of intercontinental transportation" such as cheap air travel and the "development of information technology" have "contributed to the advent of globalisation" (Cheah *et al.,* 2005:105). As a result, "in this new era, business activities become more dynamic and rely more on the global market instead of the domestic market" (Cheah *et al.,* 2005:105). In the past nation states could be largely self-sufficient, so that goods were manufactured, distributed and bought within the same country. Now industrial production is necessarily a worldwide phenomenon, with different parts of machines being produced in different parts of the world. This is especially true for engineering students in Korea or other countries, whereby local industries are constantly subjected to foreign competition as and when local firms themselves are seeking opportunities to venture abroad" (Cheah *et al.*, 2005:105).

This kind of interdependence is also reflected in the circulation of ideas. The information and resources that are conveyed through new global multicultural corporations and production networks (Held *et al.,* 1999) transcend the influence of

nation states, connecting the local with the global in the era of frequent mobility and "global integration" (Held & McGrew, 2003:3).

In *academic sectors*, frequent interaction, collaboration, speed and efficiency, global identity, multicultural communication and the management of diverse cultures are features of globalization (Singh & Doherty, 2004). The processes of globalization, however, may not be "a consistent or uniform phenomenon" (Singh & Doherty 2004:15). Given the possible diversity and complexity of the opposing forces between globalization and localization (Spelman Miller & Thompson, 2002), Singh and Doherty (2004) suggest three basic hypotheses about the mode of educational globalization.

First, they argue the *homogenization* hypothesis, that the global expansion of science and technology and education has a tendency to homogenize or standardize local culture.

> A crucial dimension of the homogenization thesis is the integration of elites with a Western education "in the functioning of international organizations like the United Nations, the World Bank, and the United Nations Educational, Scientific and Cultural Organization (UNESCO), as well as global corporations" (Holton, p. 143). In this sense, a global culture is developed not only via mass marketing but through the interests and activities of a transnational global elite (Castells, 1997; Holton; Luke, 2001 in Singh & Doherty, 2004:17).

This hypothesis suggests that the global culture shared by elites or professionals will gradually become more unified and standardized under the influence of Western norms and patterns. The second hypothesis contradicts this. The *anti-globalization* hypothesis posits that Western cultural versions of modernity are likely to be resisted and challenged by various global social movements. These may include proactive movements, such as environmentalism and reactive movements, such as Islamic and Christian fundamentalism (Singh & Doherty, 2004:17). The third hypothesis concerning the impact of globalization is *hybridization*, which encourages a blending of the diverse set of cultural repertoires made available through cross-border exchanges and education, synthesizing diverse cultural forms and language use (Singh & Doherty, 2004:17-18). Here, globalization is considered

as a "two-way" cultural process (Singh & Doherty, 2004:12) that has to be "actively implemented and reproduced" (p.35).

What these hypotheses seem to suggest is that the actual mode of globalization in education may be different from field to field, and depending on academic contexts and situations. It is thus likely that globalization has influenced ways of study, expectations, aspirations, perceptions, aims, social behaviours, power relations and political interests in the academic community worldwide with diversified as well as homogenized behaviours. For instance, some higher education institutions in Anglophone countries have responded to the fast-changing world, attempted to diversify and internationalize their pedagogy for overseas students (Singh & Doherty, 2004) and viewed "students from diverse ethnic and cultural backgrounds... as a valuable resource in enhancing the international dimension of the university" (C. Jones, 1999:37).

At the same time, an example that manifests the phenomenon of globalization is a concern with the English language skills of L2 students such as Hong Kong and Singaporean academics (Flowerdew, 2000; Hyland & Hamp-Lyons, 2002), which has been closely related to global expectations. Likewise, globalization has variously affected the need for special kinds of English teaching and learning in a global dimension, creating newly emerged social and communicative demands for and perceptions of English and EAP, which I will discuss next.

3.2. The Spread of English as an International Language and EAP

Globalization has changed the meaning of English teaching and learning in the world (Block & Cameron, 2002). The unprecedented, relentless expansion of communication in scientific, educational and economic activities on an international scale, so the argument runs, generates, in turn, the demand for a common international language, as Block and Cameron state (2002:1).

> Any invocation of 'worldwide social relations' unfettered by 'the constraints of geography' must immediately raise questions about *language*. Language is the primary medium of human social interaction, and interaction is the means through which social relations are constructed and maintained.

For various reasons, but most notably the strong economic, political, technological and cultural power of Britain during the nineteenth century and the United States in the twentieth century, this role has fallen to English (Crystal, 2003).

In effect, globalization has created new cognitive and sociocultural demands on English education, because it has facilitated faster global cultural interaction and widened social activities (Held *et al.,* 2003), in particular, among people sharing specific communicative purposes, whether they are native or non-native speakers of English. The motives for learning English are increasingly related to the need for fluent international communication between people sharing specific communicative purposes by using a particular kind of English. As McKay (2005:286) points out:

> Knowing English... permits one to open the linguistic gates to international business, technology, science and travel. In short, English provides linguistic power... Many individuals are learning English today...rather because they want access to such things as scientific and technological information, international relations, global economic trade, and higher education.

Particularly in science and technology, the vast majority of intellectual communications and international publications are conducted in English (Swales, 1990; Wood, 2001). This has led to some striking national outcomes. Among Swedish scientists in Swedish laboratories, for example, English is the common medium of communication. Institutions in Sweden and Norway have recently employed lecturers from English-speaking countries to encourage more non-native engineering students to study through English (personal communication, 2007). The global trend towards publication and communication in English is clearly shown by the following statement made by a lecturer in the engineering department at College K in Korea:

> As for engineering students, especially postgraduate students, nearly 100 % of the textbooks and all the literature, are written in English and all dissertations or theses for degrees are almost always, more than 90 %, written in English... English is an absolute factor, almost 100%, for their academic success. If they can't use English well, even though they can do well in engineering subjects, they will suffer a lot, as their work or achievements cannot be shown or highlighted. These issues have recently become more significant (KL-1).

Evidently, English is a critical instrument necessary for acquiring and accessing engineering knowledge and accelerating engineering development in many non-English speaking parts of the world. For scientists and engineers, the need for English as a common language is so obvious that it is "not often discussed explicitly in scientific literature, but is instead presumed" (Tardy, 2004:249).

The spread of English has been accelerated by the new information and communications technology (ICT), "making on-line navigation and research...and synchronous and asynchronous on-line communication critical skills for learners of English" (Warschauer, 2000:511). ICT has rapidly changed "language pedagogy and language use, enabling new forms of discourse, new forms of authorship, and new ways to create and participate in communities" (Kern, 2006:183). These fast-paced innovations in ICT and international contact, which have resulted in a highly mobile culture of communication, make international communities depend on rapid information flows and maximally efficient communication in English.

In these circumstances, English language teaching is searching for more dynamic and cost-effective ways to meet the wishes, needs and purposes of global working citizens for international communication in academic fields. Naturally, *EAP* has developed to meet these needs against the reality of a highly competitive and demanding international community, where non-native English speakers expect to receive proper attention for their own creative work. It has effectively connected people with special purposes worldwide. Since engineers need to communicate in English at the international level, it is not difficult to see how EAP has taken a major role in English language teaching for them (Cargill & O'Connor, 2006).

EAP development in the social sciences and humanities, drawn by the need to publish research in English, is also linked with the general trend toward globalization (Flowerdew & Dudley-Evans, 2002). The increased numbers of overseas students studying in the Anglophone countries, as well as the large numbers of students in many post-colonial countries, such as Singapore and countries in which English has no official status, such as China, have resulted in the expansion of EAP (Dudley-Evans & St. John, 1998).

Communication and connection by means of EAP between specialists, whether native or non-native English speakers, indicates an overcoming of the barriers of country and nationality. When they have a common interest in robot techniques, for instance, Israelis and Brazilians speak to each other, communicating in English. Learning EAP can thus be considered as a definite starting point for improved global communications. The effects of EAP in producing new English-fluent people within each specific area have almost certainly accelerated the transfer of information in the global domain. In other words, globalization has activated EAP, and EAP has at the same time prompted the process of globalization.

An obvious instance of these new trends is the case of China. With the end of the Cultural Revolution in 1975, China began actively implementing an open-door policy, and specifically encouraging EAP programmes (van Naerssen, 1988). One result of this was that China accelerated its emergence into international cooperation. It has subsequently achieved a remarkably rapid growth in science, technology and business. For example, China's foreign trade rose over thirty years from a mere 10 percent of the Gross National Product to account for a very large 45 percent (Huang, 1999 in Johns & Price-Machado, 2001). With this enormous demand for English learning for the sake of more efficient global communication in various areas, EAP has become an activity of tremendous scope, which has been accepted internationally (Belcher, 2006; Hamp-Lyon, 2001; Johns & Dudley-Evans, 1991; Kennedy, 2001; Widdowson, 1998).

Meanwhile, "changing political conditions" raise conflicting views "as to whether globalization represents an extension of Western, and particularly USA, geopolitical dominance, or whether it destabilizes the old order, opening up new possibilities for local resistance on the part or subaltern groups" (Block & Cameron, 2002:5). Some EAP specialists argue that the spread of English is shown as "an insidious and destructive force eliminating other languages, imposing the cultural dominance of the nations which speak it" (Hyland, 2006:28). For example, Master (1998:716-717) suggests:

> In an ideal world, everybody would have linguistic access to everything. If access is denied or hindered in some way, however, a power differential, whether accidental or intended, is engendered. English clearly dominates in the world today and, because English is the acknowledged lingua franca of science, technology, and business, the field of English for specific purposes (ESP) holds a pivotal position in regard to the use or abuse of this linguistic power... It denies access, guarding the status quo and maintaining the existing power structure.

Although English as an international language is not presumed "to adhere to all Anglo communication conventions, and traditional native speakerness holds no advantages" in performing academic practices, it is the case that "language imposes homogeneous ideologies and identities on passive users" (Hyland, 2006:29), making cultural dominance prevalent in the academic community. Pennycook (1997:263) thus called for the encouragement of students' critical awareness, so they would develop "understanding and questioning how language works both within and outside educational institutions." "The intention is not to reject English, but to reconstitute it in more inclusive, ethical, and democratic terms" (Canagarajah, 1999:2). Teachers in the English language teaching field thus need to research the new needs of learners who are studying in the global era, and to attempt to reshape their own modes of instruction and approaches. The current concern with globalization has extended the ways of describing the notion of EAP in a complex world, as I discuss below.

3.3. The Expanded Concept of EAP

Over the past 30 years, EAP, a major sub-domain of ESP research, has mainly looked for appropriate teaching and learning for *distinguishable learners* who are in pursuit of their own aims in learning English in particular academic contexts. Therefore the field of EAP "begins with the learner and the situation" (Hamp-Lyons, 2001:126). It has developed as a separate movement, differing from English for General Purposes (EGP) in ELT, which is mostly centred on language and general conversational genres of language, irrespective of the situations, needs and purposes of particular groups of learners (Hamp-Lyons, 2001). EAP has rapidly developed a strong research tradition consisting of a significant body of research in language teaching and learning which includes needs analysis (McDonough, 2005). "Methodologically, technologically, and theoretically enriched assessments of language use and learner needs and a growing array of means to meet them" contribute to the current recognition of EAP (Belcher, 2006:134).

Even though previous studies within EAP research illuminate key concepts and concerns such as linguistic items, types of texts, learners' target needs and skills and specific activities of disciplines (Strevens, 1988), learners' sociocultural behaviours in their learning contexts, which I examine in this thesis, have not been fully emphasized (Myles & Cheng, 2003). Moreover, until now, EAP has mostly stayed with pragmatic concerns, which have focused on target requirements and the dominant ideology, excluding socio-political issues such as "questioning requirements or engaging students in their reformulation" (Benesch, 2001:107). In view of the dominance of English and its culture in research and scholarship, particularly in the fields of science and technology, EAP specialists have just assumed that English is "neutral rather than cultural and social" (Benesch, 2001:45).

However, in view of the pervasive trend of globalization in academic sectors (cf. section 3.1), EAP has to be re-examined and re-conceptualised to adapt to the social demands of learners and communities. The social situation, changing due to the rapid movement of globalization, creates a multinational and multicultural

academic milieu. There has been a relentless and unprecedented expansion in scientific and specialized technical activity and collaboration on an international scale. This situation has generated a great need for appropriate behaviours as well as linguistic fluency in the use of English for communication in each discipline.

As there are substantial differences between the cultural codes and conventions of academic activities in different settings, L2 students' needs for appropriate sociocultural behaviours may become great when they study abroad or engage in an unfamiliar learning environment "as an outcome of increased global mobility and the internationalisation of English" (Hinkel, 2006:116), even within the same disciplinary community. As Hymes (1972:53,64 in Hinkel, 1999:4) states, the notion of communicative competence encompasses "both speaking [skills] and behavioural competence, and interpretation of speech and behaviours" of a speech community. Therefore the use of skills and language are inseparable from the concepts of culture and behavioural expectations (Flowerdew & Miller, 1995) in the actual academic context. It is important for ESP specialists to fully recognize students' perceived sociocultural dilemmas; they should be sensitive to learners' own demands regarding the sociocultural behaviours in which they use English, as well as to learners' skills and strategies for communication in the global disciplinary community.

Recent work in the field of EAP is therefore placing greater emphasis on a wider range of components, including the role of learners' contexts, their culture and the academic community in which they use English, as well as specific skills and strategies in communication (Flowerdew & Peacock, 2001; Hamp-Lyons, 2001; Johns & Price-Machado, 2001). The advocates of the term 'academic literacies' and of critical perspectives of learning have come to apply this term to "the complex set of skills... which are increasingly argued to be vital underpinnings to the cultural knowledge required for success in academic communities" (Hamp-Lyons, 2001:130). EAP has hence emphasized the importance of non-native students taking account of the academic and disciplinary cultures in which they learn, rather

than only focusing on linguistic descriptions (Hamp-Lyons, 2001; Jordan, 2002; Turner, 2002).

To help non-native academics to participate constructively in the practices and to negotiate meanings as members of the academic community in this global age, EAP has to broaden its existing concepts, embracing research into the dimensions of necessary skills in English and appropriate sociocultural behaviours in specific disciplinary contexts. EAP is hence defined as:

> language research and instruction that focuses on the specific communicative needs and practices of particular groups in academic contexts. It means grounding instruction in an understanding of the cognitive, social and linguistic demands of specific academic disciplines... equipping students with the communicative skills to participate in particular academic and cultural contexts (Hyland & Hamp-Lyons, 2002:2).

In line with this definition, I attempt to focus on learners' perceived needs in terms of skills and sociocultural behaviours in the disciplinary contexts of the community, in the context of globalization. Given that people share aims, social behaviours and conventions in an international academic community, albeit in a local context, the notion of an academic community, which I will discuss next, is pivotal in EAP (Hyland & Hamp-Lyons, 2002).

3.4. Academic Community

A community has been defined as "a group of people who share a set of social conventions that is directed towards some purposes" (Swales, 1990 in Flowerdew, 2000a:129). Members of the community may share discourse, practices, knowledge, talking, argument structures, aims, social behaviours, power relations and political interests (Hyland & Hamp-Lyons, 2002:6). In the EAP area, preparing certain learners to communicate effectively in the tasks in their special academic community has been the major goal. This is because EAP learners may learn a language in order "to become members of expert communities and to co-operate as members" using particular modes of communication (Widdowson, 1997:144).

However, even if each academic community is assumed to share specific communicative purposes and requires particular communicative skills and its own intra-disciplinary culture, this notion of community has been re-analysed and extended in the contemporary life of the academic world (Swales, 2004). This is mainly because each community may not be seen as comprising "neat and regular pigeonholes... The steadily changing (and, in the long term, transient) nature" of knowledge construction in the disciplines (Becher & Trowler, 2001:38-39) cannot be disregarded. As Hyland (2000:9) argues:

> Discourse communities are not monolithic and unitary. They are composed of individuals with diverse experiences, expertise, commitments and influence. There are considerable variations in the extent to which members identify with their myriad goals, methods, and beliefs, participate in their diverse activities, and identify themselves with their conventions, histories or values.

Therefore a community is never a "closed discourse community, in the present-day of internationalised and globalised societies" (Risager, 2006:197, 198).

Given that the whole field of language is intricately involved with communicating with other people, language learning will be affected by the whole social situation, context and culture in which the learning takes place. Therefore, learning as a situated activity targets "the mastery of knowledge and skill" which enable "newcomers to move toward participation in the sociocultural practices" (Lave & Wenger, 1991:29), that is, the *academic practices,* of the academic community. EAP thus aims to facilitate a culturally competent member of the academic community, who can actively and efficiently participate in its practices. The expanded interests of EAP, including the learning cultures and sociocultural behaviours as well as skills and language in English, also reflect in part a shift of concerns towards learners' diversified needs and beliefs in the community in the era of globalization. In this thesis, therefore, I will use the term *academic community* to describe a group of people who participate and engage with others to achieve their particular disciplinary tasks or aims in an academic context.

Given that the academic community is composed of diverse individuals and local participants, to gain membership in a new community, students aspire to purposive participation through situated practices in the relevant community. Under the circumstances, building their identity is deeply related to the negotiation process in the practices in the community, as Wenger (1998:149) describes:

> Developing a practice requires the formation of a community whose members can engage with one another and thus acknowledge each other as participants. As a consequence, practice entails the negotiation of ways of being a person in that context... our practices deal with the profound issue of how to be a human being. In this sense, the formation of a community of practice is also the negotiation of identities.

In this regard, Starfield (2001:133) argues that "community is less a given than a goal to strive for."

Additionally, in the academic community, the point should be made that certain cultural conventions are prevalent as norms (Canagarajah, 2002). The community members may sometimes conflict, contradict and resist the dominant norms. As Ivanič (1998:12) suggests, students should constructively and actively participate in the new social context which they are entering, and EAP teachers see:

> learners as intellectuals, as researchers and as active participants in social struggles, not just passively receiving knowledge and advice, but searching for understandings which will be of direct use to them, which will open up new fields of vision and new perspectives, and provide a basis for their own emancipatory and transformatory action (p.337-338).

Globalization has enormously influenced the questions of the identity as well as the perceptions of non-native students in the academic community. In considering the perceived needs of Korean engineering students 'to be proper members' of the global community of the discipline, how they identify themselves as global members of the engineering community is a major cause of concern.

Therefore the social movement of globalization and changing socio-political situations ask for and accelerate more participation of local academics in the *global academic community* than ever before; globalization has changed the conditions of

the academic community as well as the English learning needs and identities of learners. Canagarajah (2006:14) explains these changes as:

> (a) because English is nativized in many communities, we cannot treat these speakers as less legitimate "nonnative" English speakers; (b) because identities are hybrid and multiple, and most of the world is multilingual, we must conceive of learners as having identities that often accommodate English seamlessly with other languages; (c) as English has become an active additional language in many countries untouched by Anglophone colonialism, the distinction between ESL and EFL learner is fast eroding.

As a consequence, people should be "no longer prepared to think of their identities in essentialist terms, their languages and cultures as pure, or their communities as homogeneous as bounded and objective entities." Their identities must be considered as having a "constructed, fluid and hybrid nature" (Canagarajah, 2006:25). It is thus important for language learners to have critical awareness of academic practices as well as sociocultural competence to work among diverse members in the academic community in the age of globalization. The following section will review several categorizations of EAP contexts, and discuss their meanings in the contemporary era of globalization.

3.5. The EAP Context and Globalization

Among the most important elements in any English educational settings are the contextual factors, which include the sociocultural, geographical and historical backgrounds of the learners (Tudor, 1997). Learners are not separate from contextual conditions but are necessarily affected by the surrounding needs, demands and interests of the society to which they belong.

EAP contexts have been geographically and historically grouped according to how far English is used for special purposes in a given context, although rigorous grouping is nowadays challenged in the age of globalization. First of all, Dudley-Evans and St. John (1998) attempted to divide the EAP contexts into four types,

depending on whether English is used as a medium of instruction or not in tertiary-level educational sectors (Table 3.1). Korea may be approximately located around situation 3 according to this system. This is because science and technology subjects are offered in English in several technical universities (Chapter 2) while most tertiary education is offered in Korean. But the number of English-medium lectures is increasing regardless of subject areas (Digital Chosun, 2006).

Table 3.1. **Situations in which EAP is taught**

Situation 1. e.g. UK, USA, Australia	Students come from another country to study in a foreign system; for them both general and academic culture may be different; everything around them operates in English.
Situation 2. e.g. Zimbabwe	Education at all levels has been mainly in English; the Civil Service uses English, but people mostly use their first language (L1) in everyday life.
Situation 3. e.g. Jordan	In tertiary education some subjects are taught in L1, but others, such as medicine, engineering and science, are taught in English.
Situation 4. e.g. Brazil	All tertiary education is taught in the L1; English is an auxiliary language.

Source: Dudley-Evans and St. John (1998:35)

The EAP domains may also be divided by means of Kachru's (1985) widely quoted concept of sets of concentric circles: *the inner circle countries* in which the major use of English is as a first language; *the outer circle,* which inherited English as a colonial legacy and use it as an international language; and *the expanding circle* of countries where English is used mainly for communication with people from other countries. Although Kachru's historical division has an inherent plausibility, his model is now challenged. This is because the communicative, social and functional use of English is fast increasing in the outer and expanding circles (Graddol, 1997). Speakers may use English for communication purposes, sharing a cultural and social identity, wherever the geographical places are. Due to the development of the Internet and information technology, "the lexicon is constantly being added to, so the same processes are at work in all three circles" (Seidlhofer, 2002:202). Therefore, the boundaries of each circle become blurred.

Goh (1998) has identified three main environments of EAP teaching and learning. *Classic EAP* takes place in situations where non-Anglophone students go to study at

tertiary institutions in English-speaking countries. *Domestic EAP* occurs when students in non-Anglophone countries receive a tertiary education in home countries, with courses taught in English to varying degrees. The division of classic EAP and domestic EAP by Goh is similar to the categories employed by Dudley-Evans and St. John (1998). However, Goh's schema requires the addition of a *new EAP* context. This refers to those situations where students from non-Anglophone countries go to other non-Anglophone countries in which English is used as the medium of instruction. In Singapore, for example, there are many students from other Asian countries who require EAP courses, since English is the medium of instruction. Korea is mostly situated in a domestic EAP context. However, the new EAP situation might well develop in Korea in the future, because Korean science and technology institutions, as centres of excellence, are attempting to draw students from other regions to study. They use English in the English-medium lectures (see Chapter 2) and will require the newly configured EAP courses.

EAP researchers have traditionally worked with the basic division between English as a Second Language (ESL) and English as a Foreign Language (EFL). This division stemmed from the historical differences between the major objectives in teaching English (Prator, 1979). Kramsch (2002:2) differentiates between these two disciplinary traditions in the following manner:

> SL (ESL) research.... has been psycholinguistic and functional in nature and learner motivation is mostly pragmatic; the focus is on the development of communicative competence, taking as a model native speaker behaviour, and the eventual socialization into the target language community... By contrast, [in EFL,] goals are subordinated to the general educational goals pursued by the respective national school systems... [EFL] is typically expected to earn students the 'profit of distinction' reserved for a country's well-educated citizenry, it is not meant to socialize them into another kind of community of practice.

Therefore, while ESL has been used mainly for pragmatic reasons to help learners accommodate to target situations, EFL has been taught for educational purposes, to bring up generally educated citizens, not necessarily members of global communities. Whereas individual reasons for learning English were previously not clearly defined and students rarely participated in communities of practice in EFL

situations, the effects of globalization seem to have changed the motives for English learning and language teaching to communication and participation in international forums (Hinkel, 2006). As a result, non-native students tend to confront cultural conflicts between local and global expectations, whether in ESL or EFL (cf. Chapter 8). As Rosager (2006:8) argues:

> In connection with globalization and intensified transnational mobility there are many cases in which it is possible to note a glide from language functioning as a foreign language towards it functioning as a second language.

For this reason, the rigorous distinctions and dichotomous model of ESL and EFL contexts now seem to be "fast eroding" (Canagarajah, 2006:14). The simplified EAP categorizations so far based on historical and geographical divisions may now be out-of-date generalisations. This is because nowadays as an effect of globalization a sociolinguistic view of English as an international language has changed the use of English and the teaching situations of EAP. As Kennedy (2001) notes, most countries now commonly use English for international communication, so that EAP programmes are needed in all parts of the world. That is, we need to be more cautious in defining each context in terms of discrete dichotomies or categorizations. The use of English and related sociocultural behaviours become diversified or shared in each context. This is especially true in the light of the current phenomenon of multinationalism and multiculturalism worldwide.

For instance, in Korea, which has been typically categorized as an EFL context, people now aspire to use English for pragmatic and functional purposes, to communicate effectively in international settings. The particular use of English for communication is paramount in academic and professional sectors of science and technology in Korea. Therefore a refined analysis requires an understanding of individual and group variation in specific social circumstances. As Kramsch (2002) suggests, we should rethink our conceptualisation of distinct contexts.

In this regard, Johns (1997) views EAP contexts as the shared knowledge of each social community, rather than geographical groupings. Individuals living specific

academic lives develop their own literacy and sociocultural demands. The kinds of shared knowledge and conventions that occur when people speak, write and behave, that is, the "recurring features" of the current demands in their academic lives, in either physical places such as a classroom or in particular publications such as journals, are referred to as 'context' (Johns, 1997:27). For example, when engineering students write project reports or study in an academic setting, they may recognize contexts in which particular literacy and behaviours are required and apply the contextual analysis to the writing of texts or other academic practices. This contextual norm depending on disciplinary or other fields can be shared among members of an academic community at the international level, because people with special purposes now communicate and collaborate worldwide, although diversities among individuals and groups of people may still exist within the community (cf. section 3.4). Therefore, regardless of contexts and countries, the demand for EAP and the dominant use of English have been a great cause of concern. Before I focus in depth on the disciplinary conventions of engineering, I will discuss classifications of EAP in the following section.

3.6. Classifications of the EAP Branches

English for Specific Purposes (ESP) specialists have attempted to classify the whole ESP area on the premise of disciplinary areas, degrees of specificity, major practical approaches or their viewpoints. ESP is normally divided into two branches: English for Academic Purposes (EAP) and English for Occupational Purposes (EOP). EAP, as my major concern in this thesis, refers to language teaching and research that focuses on the particular communicative needs and practices of distinguishable groups in *academic* contexts, whereas EOP caters for learners working or preparing to work in an occupational context, for example in dealing with business English (Dudley-Evans & St. John, 1998; Robinson, 1991). From the early stage, ESP has been dominated by research on EAP, with particular reference to science and technology subjects, in most of the needs analysis, materials development, course design and language studies (Dudley-Evans & St. John, 1998).

Blue (1988) suggests that a distinction can be made in EAP categories between English for General Academic Purposes (EGAP) and English for Specific Academic Purposes (ESAP), depending on the specificity in terms of language forms, skills and academic practices in academic disciplines. Dudley-Evans (1997:6) describes Blue's division in the following way:

> While I believe that subject-specific teaching plays an important role in ESP, it is a mistake to consider that the term ESP should only be used when subject-specific work is involved. Where the focus in the class is on common-core skills or genres that belong to any discipline or profession, this is as much an ESP class as the more specific work. In this regard it is useful to distinguish English for General Academic Purposes (EGAP)... from English for Specific Academic Purposes (ESAP).

A large proportion of the common core element of EGAP is composed of features of a general English register, formal or academic rhetoric, generic communicative skills and proficiency in the appropriate language use in academic contexts. Subject-specific English (ESAP) includes the rhetoric, disciplinary culture, specific terminology, particular skills and academic conventions needed for a particular academic subject (Jordan, 1997:5).

Jordan (1997) called a large proportion of the common-core (EGAP) 'study skills', as a key component of EAP, regardless of subject area or academic context. [For the definitions and issues of study skills, see section 4.2.1.] However, in my view, the concept of study skills cannot be confined dominantly within the EGAP category, but can also be considered as relevant to the domains of ESAP. Specific study skills and strategies according to specific disciplines or contexts should be emphasized in EAP. For example, while 'understanding instruction in practicum' is an important study skill for the fields of science and technology, 'undertaking a survey' is the more useful study skill in social science (cf. section 7.2.1). Within the areas of science and technology, the strategies required for listening to lectures in Highway Engineering are different from those for lectures in Plant Biology (Dudley-Evans, 1994). The necessary skills for writing in science and technology are different from those of the humanities or social sciences (Casanave & Hubbard,

1992). Postgraduate students may study EAP to equip themselves with the required study skills for specific academic subjects, and usually prefer to learn communicative skills through texts and topics particularly related to their disciplines.

In addition, the ESP/EAP classifications are now challenged by EAP practitioners, because each division of ESP branches cannot be "a clear-cut distinction" (Hutchinson & Waters, 1987:16) in actual teaching practices. The classifications neglect the essentially "fluid nature of the various types of ESP teaching and the degree of overlap" (Dudley-Evans & St. John, 1998:8) between specific English, 'common-core' EAP and general English.

Dudley-Evans and St. John (1998) then suggest an informative and overarching model of ELT, which can be considered as on a *continuum* that ranges from general English courses to very narrow-angled specific ESP courses (Figure 3.1). Rather than applying a precise division of ESP/EAP classes, ESP/EAP practitioners can flexibly select the degree of specificity of courses or combine appropriate teaching approaches and materials, depending on students' needs and English proficiency, the preferences of teachers or course designers and logistic circumstances.

Figure 3.1. **Continuum of ELT Course Types**

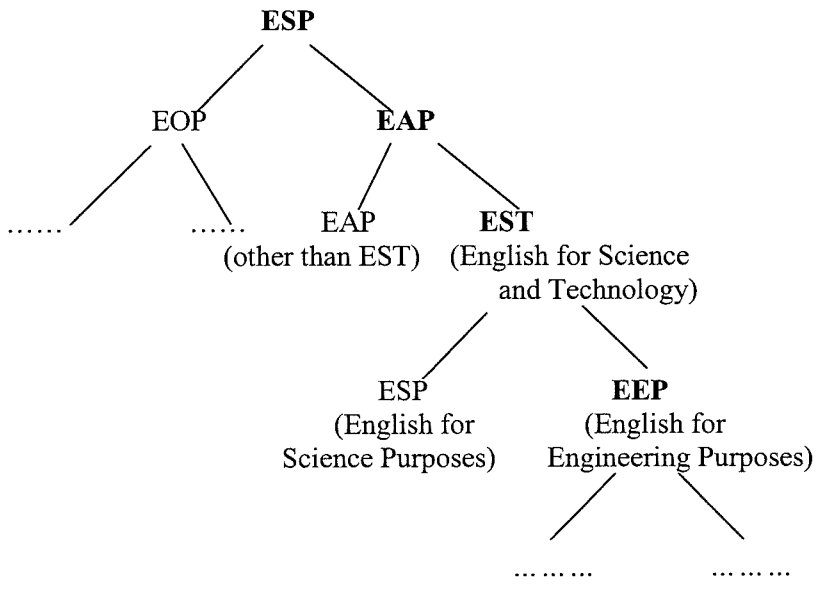
General **Specific**

Position 1	Position 2	Position 3	Position 4	Position 5
English for beginners	Intermediate to advanced EGP courses with a focus on particular skills	EGAP courses based on common-core language and skills not related to specific disciplines or professions	Courses for broad disciplinary or professional areas e.g. report writing for scientists and engineers, medical English legal English, negotiation/ meeting skills for business people	1) An 'academic support' course related to a particular academic course 2) One-to-one work with business people

Source: Dudley-Evans and St. John (1998:9)

This model is beneficial for EAP practitioners when designing programmes, as it allows them to be responsive to the contingencies which arise from diverse real situations, which normally do not match expectations and raise confusion (Dudley-Evans & St. John 1998:9). As Belcher (2006:139) put it, for "many ESP practitioners, the wide versus narrow approach debate is a non-issue," because, depending on learners' individual needs and academic levels, course designers' decisions and contextual factors, EAP practitioners have to adapt their syllabus flexibly along the continuum of EAP course types. For example, with a group of students studying one particular subject such as Chemical engineering, the course may focus on specific vocabularies, skills and conventions within the discipline. Alternatively, when students want to improve their competence in communicating with people with diverse backgrounds in real-life situations, the development of general communicative skills and cross-cultural sensitivity can be aims for the programmes. In real classrooms, therefore, EAP teachers need to be flexible in introducing elements ranging from those with a very general scope through to precisely specific materials. This does not however indicate that the categorization of EAP is of no use, because it may provide meaningful definitions and general guidelines for understanding the teaching context of EAP (Dudley-Evans & St. John 1998).

Figure 3.2. **ESP Diagram**



Source: modified from Johns (1991 in Jordan, 1997:3)

For the purpose of my study, the ESP diagram (Figure 3.2) shows how ESP/EAP can be divided according to disciplinary areas. English for Science and Technology (EST) with its distinctive rhetoric, skills and conventions has been the main focus of concern in EAP research. EST is again divided into two areas: English for Engineering Purposes (EEP) and English for pure science. EEP can also be specialized to serve more detailed areas, such as Mechanical engineering, Chemical engineering, Electronic engineering and Civil engineering, all of which may offer different demands on students (Braine, 1995:122). Postgraduate study in a Mechanical engineering department is again normally divided into more specific areas such as Fluid Mechanical engineering, Solid Mechanical engineering, Aerospace. Thus, depending on academic specificity and interests, EAP can be categorized in numerous different ways.

As this thesis considers the needs of *engineering* students in their particular academic contexts, it is mainly concerned with *EEP*. That is, I will consider the shared territory of all engineering areas, regardless of whether they are Chemical engineering, Mechanical engineering and so on, exclusive of pure science areas. The whole area of engineering is thus seen as a discipline. This view is supported by the fact that engineering is "bound up with the characteristics and structures of the knowledge domains with which groups are professionally concerned" (Becher & Trawler, 2001:42). All engineering students are expected to acquire diverse knowledge of various engineering areas such as Engineering Mechanics, Engineering Materials and Electronic engineering, as compulsory subjects (Mudraya, 2006:239; Ward, 2007). Moreover, nowadays many engineers take part in "total engineering," which means that engineers from diverse fields, such as Biochemical engineering and Electronic engineering work cooperatively on products or technologies. The boundaries of separate engineering fields are hence disappearing (personal communication with a manager of an automobile company, in December 2007).

Therefore engineering as applied science shares disciplinary conventions (Donald, 2002), and the members of such a disciplinary community are likely to have distinctive "attitudes, activities and cognitive styles" (Becher & Trawler, 2001:42).

This may lead to shared perceptions and social attitudes in the engineering community. Even though engineering and science share scientific theories and some specific terms, the academic conventions and approaches of engineering are different from those of pure science (see section 3.7.1). This indicates that the way of using English in engineering may not be identical with that in science.

Nonetheless, the relevant research on EEP has often been studied under the umbrella term of English for Science and Technology (EST). Since the early development of EAP, EAP specialists have tended to study the English of engineering and science together. Many of the studies related to EEP have thus occurred under the term EST (Braine, 1989; 1995; 2001a; Dong, 1998; Ewer & Latorre, 1967; Holliday, 1995; Kuo, 1999; Ramani *et al.,* 1988; Swales, 1971). Moreover, engineering discourse has often been poorly represented in studies of discourse and writing conventions (Koutsantoni, 2006). For example, Braine (2001b:294) explained the reason as:

> [e]ngineering and natural science (are) disciplines that share sufficient characteristics to be considered a single type of academic community. In both disciplines, the most frequent writing genre at undergraduate level appeared to be the lab report, and both disciplines require a knowledge of mathematics and science.

In contrast, some studies deal with engineering (EEP), held separately from pure science contexts (Barron, 1991b; Flowerdew, 2000; Hill & Zyl, 2002; Huckin & Olsen, 1984; Jenkins *et al.*, 1993; Koutsantoni, 2004; 2006; Mudraya, 2006; Mueller, 1997; Ward, 2001; 2007; Yin, 1988). These studies highlight the particular features and the research perspectives of EEP for engineers.

What this means is that all researches in EST and EEP which deal with language, skills and culture are located along a continuum, parallel with the relationship of EGAP and ESAP, as I mentioned before (see Figure 3.1). On the one hand, EST tends to embrace a wide range of common-core English, skills and conventions that belong to any of the disciplines of science and technology. On the other hand, the focus of EEP is on the particular features of the engineering discipline. Since this

study is located in *EEP,* which mainly enquires into the perceived needs of Korean engineering students in the community, the following section will discuss the particular nature and shared knowledge domains of engineering and EEP in detail.

3.7. English for Engineering Purposes (EEP)

EAP is particularly problematic in the engineering field. This is because English has come to dominate international communication and access to information as the international language of engineering around the world, whatever the contextual background of the country (Tardy, 2004; Wood, 2001). In this section, the particular characteristics of the engineering discipline which require English for Engineering Purposes (EEP), and the academic practices in the engineering community in the era of globalization will be discussed.

3.7.1. The Characteristics of Engineering

The major characteristics of the engineering subject – its objects of enquiry, its curriculum, its purposes and conventions and its academic culture – may be differentiated from those of pure science (Tables 3.2-3.3). This is true although the two academic fields, engineering and pure science, are both in the broad category of 'science and technology.' Although the two fields have maintained a close relationship with one another, the field of engineering (hard-applied) has developed using a variety of different approaches and expectations from those in the natural sciences (hard-pure). While science provides a theoretical background of nature and the physical world, engineering utilizes theory in order to apply it in real life situations to produce useful outcomes for humankind, as a lecturer in College U states:

> The scientist has to have a deeper understanding of the fundamental properties of a material (why), and the engineer is mainly concerned with the application of those materials (use) (e-mail communication with UL-5, in January 2006).

That is, "scientific processes are concerned with the analysis, generalization, and synthesis of hypotheses, while engineering processes are involved with the analysis and synthesis of design... The prime function of engineering is hence to "meet society's needs for design and systems (Sparkes, 1989)... Engineering programs responded to a societal demand for engineers to work in growing corporations" (Donald, 2002:62-63). Therefore the engineering discipline employs different conventions and aims from pure science, in terms of the communication-based activity of problem-solving in the community and the application of knowledge to real-life situations.

Table 3.2. **Knowledge and Disciplinary Groupings**

Disciplinary Groupings	Nature of Knowledge
Pure science (e.g. physics): 'hard-pure'	Cumulative; atomistic (crystalline/tree-like); concerned with universals, quantities, simplification; impersonal, value-free; clear criteria for knowledge verification and obsolescence; consensus over significant questions to address, now and in the future; results in discovery/explanation.
Technologies (e.g. mechanical engineering, clinical medicine): 'hard-applied'	Purposive; pragmatic (know-how via hard knowledge); concerned with mastery of physical environment; applied heuristic approaches; uses both qualitative and quantitative approaches; criteria for judgment are purposive, functional; results in products/ techniques.

N.B. This is taken from a table in Becher and Trowler (2001:36). Only the parts relevant for this discussion are used.

Engineering consists of a number of important sub-disciplines: Biological, Catalytic, Civil, Chemical, Solid and Fluid Mechanical, Electrical, Electronic, Environmental, Nucleic, Thermodynamic, Transfer and Rate Processes, Systems Analysis, Computing, Material Science. The field of engineering has expanded beyond its previous boundaries in creating new sub-disciplines such as Financial engineering

and Educational engineering. This ability of engineering to harmonize with other disciplinary areas is related to one of its key roles. As Maillardet (2004) explains:

> [Engineering is] often acting as an arbiter between the views held by those operating solely in one or other area. It is thus important to restate that engineering is more than understanding science; it is essentially a vocational subject which relies upon a sound understanding of scientific principles together with an appropriate facility in mathematics, the vital communication and modeling language.

Table 3.3. **Teaching and Learning in the Disciplinary Contexts: a Conceptual Analysis**

Educational Dimensions		Categories of academic disciplines and their typical educational characteristics	
		Hard-Pure e.g. Physics, Chemistry, Molecular Biology	**Hard-Applied** e.g. Engineering
Knowledge-related Territory	**Curriculum**	Cumulative and atomistic. Linear and hierarchical. Tightly structured (sequenced). Common paradigm acknowledged. Curricular coherence important.	As for Hard Pure with less emphasis on explanation, accuracy and precision.
	Content-syllabus	Fixed, cumulative, quantitatively measured	Similar to Hard Pure
	Assessment	Specific, focused examination questions. Knowledge acquisition and accumulation. Numerical calculation, experimental skills, MCQs & objective tests, not double marking or use of mark schemes & guidelines. Norm-referenced assessment.	Greater emphasis on knowledge application and integration. Problem-solving more important than in Soft Applied. Ultimate assessment of readiness for professional career.
	Main cognitive purpose (tacit)	Logical reasoning, capacity to apply and test ideas in linear argumentation. Ability to understand and interpret theory. Use of facts, principles, classifications, subject specific intellectual skills on material world. Ability to use accepted scientific viewpoint.	Strong emphasis on integration and application of knowledge in specific careers.
Socially-related Tribe	**Group-characteristic of teachers**	Research orientation, both competitive and collaborative. Teaching not pedagogically contentious, content easily changed, limited preparation required.	Similar to Hard Pure. External accreditation
	Types of teaching methods	Focused, instructive, teacher informs student. Large group lectures initially, with labs (& fieldwork), problem classes with GTAs. Presentations & provided materials, self-tests, demonstrations.	Similar to Hard Pure. Simulated and real professional work introduced in U/G programmes
	Implicit learning requirements of students	Ability to memorize, experiment, model, calculate, solve logical problems, deploy facts and figures. Limited forms of written exposition required.	Similar to Hard Pure. Greater emphasis on practical competence and ability to apply theory (hypothetico-deductive reasoning) to professional contexts and focus problems.

N.B. This is taken from a table by Dave Riley (2003), originated from Neumann, R., Parry, S. and Becher, T. (2002). Only the parts relevant for this discussion are used.

For this reason, engineering students are expected to acquire a broad set of skills to accomplish the aims of their discipline in the community. Donald (2002:64-66) suggests:

> Reasoning skills rated most important or critical for engineering graduates include breaking down complex problems into simpler ones, reasoning or problem solving in situations where all the needed information is not known, and identifying all the variables involved in a problem. The most dangerous error noted by engineers is applying a formula, algorithm, or other rule without sufficient justification... There is also pressure to ensure some exposure to the humanities and social sciences, to ethics and communication skills… "We have to learn in engineering to speak concisely, precisely, tersely, and actually. This is our game. Engineering is to make complexity understandable and manageable."

Precise language use and reasoning skills are therefore seen as requirements for the engineering profession. Thus conventions have developed which require engineers to behave in certain ways and share a particular rhetoric, communicative purposes and skills, as shown by the following excerpts from Korean postgraduate engineering students at College U:

> In short, engineering subjects target problem solving. In other words, we need to do work and solve problems effectively and economically, and it is also important to acknowledge and explain why doing so is significant… So the process includes logical thinking, dividing problems and solving each problem, and combining all the conclusions returning to the original questions and seeking the final answers. In engineering fields, the critical reassessment of existing facts, that is, repeating others' experiments, solving the problems again with different approaches and comparing the results, are important in many cases (US-5P).

> Clear and fluent connection of each point in writing is needed. The use of words is very straightforward, escaping ambiguity. Transfer of meaning should be clear and fluent (US-15M).

Traditionally, however, in the UK and North America engineers have considered that writing is only a tool for presenting their engineering knowledge as a "by-product," rather than an "end-product." They have been more familiar with mathematics and diagrams than with languages as media of communication (Ahearn, 2006:112). Accordingly, although engineers did wonderful work to allow nations to prosper through the Industrial Revolution, their achievements were not revealed in written forms, and often not highlighted among people. Engineers have

recently begun to realize the importance of communication in enabling their work to be recognized in society (Ahearn, 2006).

The recognition of the importance of communicative skills in English mainly came from the increasing special demands made by the great population of foreign students in departments of engineering in the global age (Hyland, 2006; Jenkins *et al.,* 1993; Shaw, 1991). According to the Higher Education Statistics Agency (March 2005), the highest proportion of non-UK students, 28.2%, were majoring in engineering in the UK in 2003-2004. The popularity of engineering among international students has remained relatively steady in US universities; in 2005-2006, engineering constituted 16 percent of all overseas students (Bhandari & Koh, 2007). The American Association of Engineering Societies reports that in 1991 the national averages were 50.1% and 39.6% respectively for foreign nationals enrolled in Ph.D. and Master's degree engineering programmes in the US (Jenkins *et al.*, 1993). It is likely that these numbers will continue to increase, and each faculty in each context has thus been aware for some time of the importance of English education for L2 engineering students (Ward, 2001). The engineering profession in the UK hence recognizes the importance of communication for Korean engineering students:

> No matter what subject it is, if you are not communicating, you have an immense problem. Some say English is not so critical, because if they know science terminology, they can communicate easily. But I don't agree with that. I think there is no substitute for simply being able to talk to somebody (UL-2).

Non-native students have often had great difficulty in expressing themselves and receiving information in English. As Huckin and Olsen (1983 in Jacobson, 1986:174) state:

> Communication skills are not only among the most important skills engineering students need to have, they are also the skills many recent engineering graduates most sorely lack.

In East Asia and elsewhere, engineering subjects that were originally imported from the Western countries have developed and sustained academic conventions, skills

and roles in universities and laboratories (Wood, 2001). Here, "the drive to make progress in engineering fostered an international intellectual and research environment" by using English (Crystal, 2003:10). In these contexts, engineering now requires a great amount of global communication by participating in international conferences, studying with other foreign lecturers and students who have come abroad to study, and collaborating with foreign engineers.

Therefore international communication has now become a common issue in the education of L2 engineering students (Huckin & Olsen, 1984; Koh, 1988). Without the ability to collaborate with engineers from other nations, certain kinds of engineering tasks become less viable and more problematic in the community. Engineering researchers and students who cannot communicate effectively will almost certainly find their careers seriously handicapped (Huckin & Olsen, 1984). Unlike students of the hard sciences, to apply scientific knowledge to solve problems and contribute to human welfare, engineering students need to be equipped with appropriate communicative skills to understand real-life contexts and to communicate with a variety of people worldwide. This involves requirements for a sound understanding of different cultures, and negotiating with people in various social milieus in the multicultural academic communities of engineering. In short, effective communication and social interaction are truly essential for success in highly technical fields such as engineering. EEP programmes are hence crucial for L2 engineering students, to raise their awareness of discipline-specific language, skills, practices, conventions and power relations, eventually, to make them effective engineers in the context of globalization.

Although this thesis does not deal with the linguistic features of the formal texts of engineering, these are certainly related to the discussion of skills-based and sociocultural elements of EEP, in which this study locates its main concern. Therefore, in the section that follows, the particular nature of language in EEP will be briefly discussed.

3.7.2. The Nature of Language in EEP

EAP researchers have made numerous attempts to understand the distinctive nature of the language employed in engineering. In developing more focused methods such as discourse analysis and corpus analysis, EAP researchers have established the notion of text-specificity for the particular communicative purpose of users within the discourse community of engineering, not only in formal written texts (Hyland, 2000; Koutsantoni, 2004; 2006), but also in spoken discourses (Dudley-Evans, 1994; Olsen & Huckin, 1990; Simpson-Vlach, 2006).

Studies regarding lexical, discoursal and schematic features in engineering indicate that the use of English is specific to the disciplinary discourse community. In engineering, most texts tend to follow the Anglo-American model of engineering writing (Wood, 2001), despite variations depending on specific situations, genres and sub-disciplines. Broadly speaking, technical writing has mostly featured a unified use of particular rhetoric, skills, and shared conventions in English in formal engineering writing.

For example, learning the basic common framework of the specific skills and genres for writing good technical reports is essential for those working in the area of engineering (Krishan *et al.,* 2003). The rhetorical conventions in English accepted by the community of engineering worldwide are often provided as standard publication guidelines for journal article submissions (Wood, 2001). When I taught EET to Korean engineering students in Korea, I used published articles in engineering journals as models for their writing, as engineers follow typical patterns of writing conventions. In this study, I will call this special variety of English *International Engineering English (IEE)*, following Wood (2001).

Given that the use of English is a shared and common feature in the discipline, L2 engineers have attempted to express their opinions by using the discipline-specific patterns and conventions used by the elite members of the discourse community. They recognize that diverse contents, opinions, knowledge and creative ideas from

local contexts need to be described within the common systems of English use which are accepted by the wider engineering community. Engineers are able to make their inventions and creative technologies known globally through using the medium of IEE. For example, when Korean engineers established new forms of global technologies in the Digital Multimedia Broadcasting (DMB) and Mobile Internet (Wibro) areas, they needed to put forward the technologies in the discipline-specific variety of English. DMB and Wibro rapidly became the premium world ranking and standard global technology. Thus, engineers are able to introduce a particular national innovation to the global engineering community by using the internationally appropriate pattern and convention of engineering English to promote it.

Therefore these rhetorical conventions of English function as a tool for engineers to make claims or contribute ideas and knowledge to the engineering community. Since English is the unique carrier of engineering information and instrument of engineering communication (Wood, 2001), engineering texts written in English maintain an exclusive variety of English which allows engineers to cooperate and share ideas in the global academic community. This is justified because engineering is a social construction, which is created by engineers in terms of what is accepted by the community of engineering in a global dimension (Wood 2001:75). "Each document must convince other people" by its use of the engineering-specific variety of English "in order to be accepted as knowledge" (Winsor, 1990:60) in the engineering community. In addition to the shared use of English language, the nature of academic practices in the global engineering community, which is one of the major issues of this thesis, will be discussed below.

3.7.3. Academic Practices in the Global Engineering Community

Globalization has influenced engineers to use English for pragmatic, technological, academic and economic purposes to communicate effectively in international settings. Engineering students are likely to aspire to be members of the global

academic community through participating in various academic practices by using shared rhetoric, genres and discipline-specific skills of English. Subject lecturers may also be concerned about building a community with new students through their academic practices, and students' participation in the sociocultural practices in the academic community is a cause of major concern for engineering academics. Globalization has thus created diverse perceptions about the needs of communicative skills and sociocultural behaviours within the community of practice.

In previous times, L2 engineering students mostly participated in their local communities and communicated in the local languages in EFL contexts, requiring only reading skills in English. Nowadays, however, engineering students around the world employ various types of literacy and oracy in English, to participate "in meaningful communication" in the global community (Hinkel, 2006:113) and to "respond to a global demand for increased technological expertise" (Donald, 2002). To engage in conversation in the global community, to access technical, educational or professional opportunities worldwide and to gain global recognition, they need to be able to speak, comprehend, read and write in English. As English is widely accepted as an international language and plays a dominant role in publications and communications with distinctive patterns and conventions in the engineering discipline, engineers may suffer from difficulties due to lack of relevant skills in English.

Membership of the engineering community requires sociocultural interaction and communication; students need to present their ideas to others in lectures, seminars, conferences and supervisions. They are involved in presenting arguments, discussing and assessing controversial situations and solving problems. These interactive processes are highly negotiable, and people rarely follow exact patterns and rules of how to behave in seminars or supervisions. This is because they may have multiple and divergent beliefs, thoughts, social values and practices (Hyland & Hamp-Lyons, 2001). Building identity is thus a negotiation process in the community (Wenger, 1998). Important components of EAP/EEP instruction may

thus be related to negotiation and the dynamics of interaction and interpersonal relations in the community.

However, L2 engineering students in local contexts may often have an essentialized view of the dominant culture of the discipline. In academic practices, students tend to be oriented to the dominant target situations based on Anglophone models (Kubota, 2004). They may also encounter sociocultural gaps between global and local expectations; there may be enormous tensions between global expectations and local practices. In this regard, it is important for students to acknowledge that the academic context is hybrid, multicultural and constantly changing and to be equipped with critical awareness and flexibility based on understanding and exploring the multiplicity of cultures when they participate in academic practices in the global community (cf. section 4.3.3.4). Therefore globalization has significantly changed the requirements of literacy and sociocultural behaviours in the global engineering community. Although students accept conventions for the formal use of discipline-specific English and multi-skills, they may also need to be aware of appropriate sociocultural behaviours in academic practices.

Throughout this chapter, I have argued that globalization has enhanced the importance of English and EAP in academic sectors, and the focus of EAP research should extend to consider sociocultural behaviours as well as skills in the global age. Globalization requires students to participate in the global academic community of practice and to be equipped with social and communicative competence in English wherever they are. As a result, the boundary between ESL and EFL contexts in EAP fades. I also examined the particular conventions, use of English and academic practices of the engineering discipline which call for a special English teaching approach, EEP.

The global world order stimulates L2 students to face their emergent needs in English. Accordingly, it is crucial to identify more accurately the problematic elements in the skills and conventions of English in engineering for L2 learners and the reasons for those, so as to establish appropriate forms of EAP pedagogy. In order to mesh EAP education with emergent needs in the era of globalization, a

broadly focused needs analysis is required that encompasses the aspects of communicative skills and behaviours in the sociocultural context. Therefore, the next chapter will explore the theoretical aspects of needs of L2 learners that relate to skills and sociocultural behaviours in the global academic community.

Chapter 4.

Needs in the Global Academic Community

The previous chapter investigated the influence of globalisation on the role of English for international communication and the impact of this on EAP, EAP contexts and the engineering academic community. Globalization has created new demands and perceptions of students in the communities of practice. Issues concerning the growing importance of English as an international language were discussed in the previous chapter. The present chapter will focus on the literature on and implications for needs analysis in terms of skills and sociocultral behaviours. The chapter first discusses the importance of participants' perceptions when identifying their needs in relation to globalization. I will then investigate current issues and research relating to needs in terms of skills and sociocultural behaviours, and discuss how EAP can address these needs in the contemporary era of globalization.

4.1. Needs Analysis, EAP and Globalization

While the interest in and role of EAP have widened and diversified with globalization, as discussed in section 3.3, EAP has retained its central concerns with learners and learner needs. This section will investigate the relationship between EAP and needs analysis, concepts of and approaches to needs analysis and the meanings of perceived needs in the global age.

4.1.1. The Changing Concepts of Needs Analysis in EAP

EAP can be theorized as "the needs-related nature of teaching" (Dudley-Evans & St. John, 1998:1). The major focus of needs analysis in EAP has been on how

effectively EAP teaching can be relevant to learners' purposes and contexts of learning. Such analysis is a crucial starting point when deciding the contents and methodology and when designing syllabuses and lesson plans (Flowerdew & Peacock, 2001; Hyland & Coles, 2006; Mok, 1987; Tickoo, 1987), especially in tertiary academic settings. Accordingly, needs analysis and approaches to EAP have been responsive to learners' real-world communicative requirements when learning English within a specific context.

The term 'needs analysis' became a pivotal one with the appearance of ESP in the 1960s at the Makerere Conference (Commonwealth Education Liaison Committee, 1969:19 in West, 1994:2). The general background of the development of needs analysis is explained by Tudor (2001:6) as mostly due to the increased need for language learning to relate to communication in international milieus. The expanding desire for EAP to enable people to operate in special domains of use in international settings called for needs analysis, in accordance with environmental factors such as economic expansion and the growth of science and technology (Dudley-Evans & St. John, 1998). The diversity of students' ethnic, linguistic and educational backgrounds and the growing professional and institutional expectations of competence in "dealing with the social, cultural and ideological contexts of language use" in the global community have also enhanced the importance and requirement of needs analysis in EAP (Hyland, 2006:5).

Given that EAP is mainly focused on learners' communicative purposes within a sociocultural context, it is essential to decide what learners' needs are, and how they can be identified and analysed in the given context. That is, the scope and approaches of needs analysis, based on "what people see as needs" (McDonough, 2005:59), have continually evolved and varied according to the learning situations which researchers have dealt with (Braine, 2001a) and evolving faculty and student needs (Stoller, 2001).

The early research on needs in EAP underwent stages of identifying special linguistic dimensions such as register analysis (Ewer & Latorre, 1967; Halliday *et al.*, 1964) and rhetorical or discourse analysis (Allen & Widdowson, 1974; Trimble,

1985), in pursuit of suitable teaching materials for learners, predominantly for scientific and technical contexts. Since the early 1970s, however, there have been major paradigm shifts in EAP research and pedagogy from attention to the surface forms of language to a focus on the direct needs of learners. An EAP approach specializing in the communicative needs of students has been seen as a humane activity, because it can incorporate a wide variety of needs related to students themselves. As Dudley-Evans and St. John (1998:126) state,

> the aim (of needs analysis) is to know learners as people, as language users and as language learners; to know how language learning and skills learning can be maximised for a given learner group.

EAP researchers have hence been interested in "describing the types of tasks, skills and behaviours required of learners" in the future target situations (Benesch, 2001:9). Significant research has been done regarding target tasks and the sets of skills required for carrying out academic tasks (Horowitz, 1986; Johns, 1981; Munby, 1978; Ostler, 1980). The analysis of targets has been based upon pragmatic perspectives, in order "to provide students with the writing skills and the cultural information... to perform successfully" (Reid, 1989:232 in Benesch, 1993:711). However, the notion of skills transferable to future target academic settings has been challenged, because these skills presumed an underlying common reasoning process, regardless of disciplinary areas and for all levels of learners, from primary to tertiary, from native speakers to non-native speakers. [I will discuss the concepts of skills in the following section 4.2.1.]

"Doubts about the generalizability of study skills from one context to another" (Benesch, 2001:11) and "the possibility of a mismatch between institutional demands and learners' perceptions of what they need" (p.42) led to the analysis of participants' perceptions, that is, subjectively felt needs of students (Dudley-Evans, 2001) as identifiable elements of their situations, skills and behavioural needs. The research mostly includes "reactions of students to assignments and the processes they go through in fulfilling them as well as faculty reactions to students' participation and writing," and recognize teaching and learning "as an interactive social practice" (Benesch, 2001:11).

Since learning a language is not just a mental process but a process of negotiation between individuals and society, the conclusions of needs analysis in EAP are constantly checked and re-assessed according to individual and social changes (Hutchinson & Waters, 1987). In this regard, Johns's (1997) 'socioliterate' view of academic literacy positions learners' subjective needs in relation to social communities:

> Individuals cannot, and often do not wish to be, completely free to make meaning and create new texts. Our students are aware of the social construction of discourses; they know that they are influenced, and judged, by the cultures and language from which they come and into which they hope to enter (p.14).

Learners are therefore viewed as social beings, achieving a sense of identity through learning to enter with increasing confidence into the ways of working that are features of particular communities. One of the reasons why learners learn a specific language is to be a member of a certain community, using a language, skills and culture in a certain context for communicating with other members of the community (Widdowson, 1997). Therefore, it is crucial to identify learners' subjectively felt needs in EAP, so that the social relationship of language learners and their context is not neglected. These subjectively felt perceptions are also the focus of the present study.

4.1.2. The Perceived Needs

Needs analysis should be attentive to language learners, seeing them as having different needs and interests in their practices. It is more profitable to focus on learners as human beings and to consider participants' subjective needs, wants and perceptions of learning the language in their own context. With EAP's focus having been mainly based on target situation analysis, remote from students' situated contexts, much scholarship in EAP has "excluded students' possible participation in curricular and pedagogical decision-making" (Benesch, 2001:52). This view, that human target behaviours can be predicted mechanically, is problematic. As Hamp-Lyons (2001:128) states:

> Research into the academic language needs of students is more humanistic than research that looks at texts, genres and academic contexts; it incorporates a wider view of 'needs' and typically includes students' 'wants' and preferences as well as more concrete needs.

The notion of perception was originally seen by cognitive and developmental psychologists as referring to a biological response to the external world (Geert, 1983:vii):

> The process of perception is defined formally as a transformational relationship between a perceived, external world and the physical energies acting upon the senses.

Although perceptions are rooted in individual psychological feelings, the term certainly has more than a biological meaning, because "socio-cultural conditions always influence our cognitive activities, mediating how we perceive and interpret the world around us" (Canagarajah, 1999:14). As Giddens (1984:46-47) states, perception is therefore affected by individuals' active engagements with the social world:

> perception is organized via anticipatory schemata whereby the individual anticipates new incoming information while simultaneously mentally digesting old... Perception is actively organized as such by the perceiver. The main point of reference is the body in its active engagements with the material and social world.

In this regard, the investigation of participants' subjective perceptions is an important requirement for understanding students' needs and concerns in social contexts (Christison & Krahnke, 1986; Myles & Cheng, 2003). In order "to explain and understand any human social behaviour... we need to know the meaning attached to it by the participants themselves" (Nielsen, 1990:7 in Leki & Carson, 1997:43). Describing how participants experience, interpret and understand, Wenger (1998:146) argues that all their perceptions are "neither simply individual choices nor simply the result of belonging to the social category." The perceptions thus come from the dynamic "process of the mutual constitution" of individual and collective identities through participation in social communities.

Furthermore, Benesch (2001) relates learners' perceptions to Freire's notion of 'hope,' which refers to "the dream, the option, the decision, or expectancy in the struggle" (Freire, 1994:91 in Benesch, 2001:xviii). Benesch suggests that needs analysis should attend that "target needs are subject to criticism or change" (p.43). She differentiates 'needs' from 'rights.' While 'needs' is defined as a psychological term simply "suggesting that students require or want what the institution mandates" or a biological term as in basic human needs (p.61), 'rights analysis' "attends to possibilities of more informed democratic participation in academic institutions... in hopes of encouraging habits of social cooperation." It aims "to build healthy, participatory communities (p.63)... and to offer opportunities for negotiation, depending on local conditions and on the current political climate" (p.62).

In sum, *perceptions* include complex meanings, that is, individuals' psychological aspirations when they engage actively in social relations and problematize target situations. This study focuses on the concept of subjective perception, as I attempt to trace how the social changes due to globalization have led people to perceive the urgent requirement for a variety of communicative skills and demeanours within a rapidly evolving social and economic context. Globalization has made analysizing participants' perceived needs in EAP more essential than in the previous era. There are fast changing conditions of global integration and frequent geographical mobility (Singh & Doherty, 2004; cf. section 3.1) that impose communicative demands and diverse learning needs in different contexts. In particular, in non-Anglophone contexts, the notions of perceived needs have more implications. In the previous period, for many students, English was seen as merely a requirement for an exit or entrance examination and viewed as a subject like mathematics or music, neglecting needs for English outside the classroom (Graves, 1996). However, nowadays non-native students clearly anticipate and aspire to participation with adequate linguistic skills and sociocultural behaviours in the global academic practices conducted in English. Because of the expanding and changing social situations of globalization, there is a considerable demand for EAP teachers to assess these students' perceived needs in the contemporary context (Hinkel, 2006).

It thus becomes crucial for the EAP profession to develop appropriate tools for identifying learners' subjective communicative needs within the global community and to translate them into coherent course structures.

In this regard, in the implementation of needs analysis in view of globalization, the comparison of perceptions among diverse groups of members in different contexts, which is my focus in this research, may be desirable. This is because it can provide valuable insights into how globalization has affected learners' perceptions regarding communicative and social demands in different settings. The following sections will consider definitions, issues and challenges of the two major dimensions of needs of this research, namely skills-based needs and sociocultural behaviours, in relation to globalization.

4.2. Needs related to Skills

This section addresses the concepts of skills-based needs and the effect of globalization on these needs. I will firstly define two levels of skills considered in this study, language skills and study skills, and argue that L2 students call for discipline-specific literacy, the integration of multi-skills and the management of 'new' skills in the context of globalization.

4.2.1. Concepts of Skills-based Needs

The concept of skills often includes the categories of language skills and study skills. Various layers of concepts of necessary language skills and study skills have proliferated, depending on the researchers. Dudley-Evans and St. John (1998) have called language skills 'macro-skills,' each consisting of a number of precisely defined 'micro-skills.' These micro-skills can correspond to study skills. Language skills and study skills encompass a wide range of activities for learners in various study situations. For example, Munby (1978:123-131) set up a 'taxonomy of study

skills' including an extremely precise list of 260 study skills categorized into 54 groups. [He called study skills 'language skills.']

In this study, *language skills* refer to four skills: those of listening, speaking, reading and writing. The concept of *study skills* refers to a very wide range, including strategies, techniques and other non-linguistic elements, following Johnson and Johnson (1998:309):

> at one end of the spectrum we are concerned with relatively 'mechanical' skills or techniques (libraries; referencing), and at the other end with study processes and strategies that are virtually synonymous with the skills and subskills of language use (reading; listening). Others are defined according to the study situations themselves (seminars; examinations) and yet others concerned with personal aspects of efficiency and time management quite unrelated to linguistic competence.

Language skills underpin study skills, and language skills and study skills show an integrated relationship (Jordan, 1997:6). Language skills are applied regardless of academic situations, while study skills are normally considered in relation to particular academic situations such as lectures and conferences in the academic community.

Historically, skills-based EAP courses originated in the belief that the teaching of language with a focus on linguistic concerns such as register and rhetorical description is insufficient (cf. section 4.1.1). From the early 1970s, EAP researchers became interested in "how students acquire English in academic settings," and shifted their attention to study skills and strategies (Benesch, 2001:9). EAP teachers have argued that literacy may best be acquired as students seek meaning and process texts that are of interest to them (Johns, 1997; Zamel, 1982). There is a need to address the "thought processes that underpin language use" when skills are used to complete a task. "These thought processes may either be fairly general, relating to all academic or professional activity, or specific to a particular discipline or profession" (Dudley-Evans & St. John, 1998:24) (see section 3.6).

It is presumed that underlying all language use there are common processes of reasoning and logical interpretation. Based on an instrumental and prescriptive concern "to offer a model of 'good' study habits," EAP scholars have adopted a skills approach "in order to encourage increased personal autonomy and responsibility for one's own learning" (Johnson & Johnson, 1998:310). A skills approach helps to clarify "the relationship between teaching and target behaviours as well as itemizing the skills contributing to those behaviours, such as how literary searches, note taking, lecture comprehension, etc., could be integrated to assist learners with their writing skills" (Hyland, 2006:18-19). A number of studies about study skills were thus first conducted to help native English speaker students become effective independent learners in the UK, and the teaching approach and materials designed for native students have been brought into use for non-native students (Jordan, 1997), to help them do what will be expected in academic contexts. Accordingly, as Dudley-Evans and St. John (1998:24) mention:

> There is a clear overlap with related work in teaching study skills to native speakers (Williams *et al.*, 1984). The skills were taught using general carrier content, and reading or listening passages were chosen on the basis of general academic interest and authenticity. It was assumed that the skills learnt through the exercises could be transferred to the students' own specific tasks.

However, this notion of 'transferable' skills began to be problematized as a contentious and "deficit model," because it does not consider social and cultural practices in particular academic contexts (Lea & Street, 2000:32), as I will discuss below.

4.2.2. Globalization and Skills-based Needs

Research into needs for effective communication has proliferated worldwide in recent years. This is because the contemporary social changes related to globalization have led to a more specific concern with the manner in which language is used for communication among different groups of people. The needs of language learners have become more shared as well as diversified in

multinational disciplinary settings (Kramsch, 2002). In this new situation, the communicative needs of learners in relation to skills have developed, with changing concerns and deeper and wider perspectives than previous ones.

First of all, studies of disciplinary tasks and genres have criticized the concepts of language skills and study skills, indicating that communication is more complicated than first thought (Hyland, 2002). This is because the concepts of language skills and study skills presume an underlying common reasoning process, regardless of the disciplinary areas and learners' situated contexts. The notion of skills is assumed to mean 'a set of atomized skills' which students should learn and then transfer to another context; the emphasis is on "surface features, grammar and spelling" (Lea & Street, 2000:34).

The notions of transferable study skills and strategies are criticised, because these skills do not match with the sociocultural contexts in which students are involved. "More discipline-sensitive and discourse-based approaches see learning as an induction into a new academic discourse rather than an extension of existing skills" (Hyland & Coles, 2006:2/2). The features of situated literacy competence may be different according to particular disciplines and contexts. "Each community has different purposes and ways of seeing the world which are associated with distinct practices and communicative conventions"... Therefore, "successful communication depends on the projection of a shared context" in appropriating a "cultural and institutional relationship" (Hyland & Hamp-Lyons, 2002:5).

Furthermore, since the mid-1990s, the term *academic literacies* has come to take into account the cultural and contextual components of skills practices "at the level of epistemology and identities in tertiary education... as constituted in discourse and power" (Lea & Street, 2000:35). "Academic Literacies research points to the complexity of the codes and conventions that students need to negotiate to become accomplished players in the academy...to consider the institutional, disciplinary and social contexts" (Ivanič & Lea, 2006:12-13). Johns (1997:2) considered the notion of academic literacy as an inclusive term encompassing reading, writing, speaking and listening, "because it [academic literacy] requires an understanding

that these skills are influenced by each other" in different social contexts. It thus incorporates "the complex set of skills which are increasingly argued to be vital underpinnings of cultural knowledge required for success in an academic community" (Hyland & Hamp-Lyons, 2002:4). Study skills are hence contextualized in particular disciplinary areas (Benson, 1989; Hamp-Lyons, 2001). In EAP programmes, students may focus on the study skills particularly required for their specific disciplinary areas. Therefore the concept of study skills cannot necessarily be categorized within a common-core EGAP (cf. section 3.6).

The growing demand for effective and collaborative communication in multinational academic situations has led to a considerable amount of research into identifying and teaching the communicative skills needed to participate in a particular disciplinary context, going beyond a set of universal rules or transferable skills. Dong (1998) studied science and engineering postgraduate students and thesis advisors, and illustrated the predominant influence of disciplinary cultures on thesis writing. Jenkins *et al.* (1993) surveyed engineering faculty members' attitudes to writing skills to determine the prevailing practices in writing on engineering. Casanave and Hubbard (1992) studied the differences between the writing conventions and patterns of science and technology and those of the humanities and social sciences. Given that publishing papers in the international literature is important, Chinese academic researchers in the agricultural and environmental sciences were reported to develop very specific writing skills to meet the discipline-specific expectations of English-speaking journals (Cargill & Connor, 2006).

The academic community and disciplinary context permeate at the international level, because globalization activates more participation of local academics in the global community (section 3.4). Therefore students who want to be members of the international academic community need to learn a specific variety of literacy used in discipline-specific communicative practices in the community. In this study, I will continue to use the terms 'language skills' and 'study skills' to mean not decontextualized, transferable or atomized skills, but components of situated literacy and oracy in the disciplinary context.

Another criticism of the skills approaches is that conventional teaching practices accommodate each language skill and study skill separately, dividing them into pedagogically convenient units of learning and teaching materials. My argument is, however, that learners cannot learn these skills in isolation. In the actual classroom practice of EAP, a *multi-skills* approach is more powerful. For example, reading skills have mostly been taught within EFL. However, the effective learning of reading skills involves the active writing or speaking of learners and the learning of new kinds of literacy. As Hinkel (2006:113) states:

> In an age of globalization, pragmatic objectives of language learning place an increased value on integrated and dynamic multiskill instructional models with a focus on meaningful communication and the development of learners' communicative competence. In many locations around the world, learning English has the objective of learners' gaining access to technical, educational, or professional opportunities.

Swales (2004:2) thus attempted to see the research world's communications "no longer as single – and perhaps separable – communicative resources but as forming complex networks of various kinds in which switching mode from speech to writing (and vice versa) can play a natural and significant part." The growing international communication in global contacts between nations for particular purposes seems to require a balance of various skills, because "skills are not normally activated in isolation from each other" (Johnson & Johnson, 1998:323) in meaningful communications.

Therefore there has recently been an influential expansion of multi-skills instruction of language skills (Hinkel, 2006), and the English teaching field widely accepts that "skills are interconnected, with pedagogies and curricula being developed to teach them together" (Canagarajah, 2006:5). All skills need to be coordinated as necessary to "increase learners' opportunities for purposeful L2 communication, interaction, real-life language use, and diverse types of contextualized discourse and linguistic features, ... developing students' language proficiency and skills" (Hinkel, 2006:114). For this reason, a combination of skills and a balanced approach which improves various skills are needed to promote learners'

communicative language use in EAP classrooms, and this view will be taken in this thesis.

In this regard, recent needs analysis of language skills and study skills tends to explore an integrated relationship of multi-skill instructional models as suited to an age of globalization. Van Naerssen (1988), for instance, presented a needs assessment (Xu, 1985 in Van Naerssen, 1988) that stressed the need for multi-skills training rather than single reading skills training and the sole use of technical materials. Miller (2001) also found that Korean first-year undergraduates recognized a wide variety of needs that included all four language skills.

Although all language skills are necessary for students, some needs analysis has attempted to establish the priority of learners' needs in particular skills (Chia *et al.*, 1998; Johns, 1981; Pholsward, 1993; Zughoul & Hussein, 1985), because EAP teachers need to be informed in a specific way about the skills in which students are most deficient in relation to their development in the academic context. In Korea, for example, while reading and listening skills have been normally accessed in the school curriculum and through formal examinations, speaking and writing have not been trained to such a degree, as shown in Chapter 2. In this respect, Korean postgraduate students, who have to construct knowledge and communicate actively with foreigners in the academic community, may need to learn more adequate writing and speaking skills. Therefore it is important for EAP teachers to acknowledge the main requirements for skills in a given situation, in order to help students to properly balance all language skills and necessary strategies. In actual EAP classroom practices, all or several skills need to be linked as necessary inputs and outputs, as they continually interact during information exchange processes.

The next issue that needs to be considered in relation to communicative skills is closely relevant to globalization itself. The rapid changes in contemporary society worldwide have reshaped study situations, the strategies used and techniques pursued in the education field. As a result, *new skills* which are required in the era of globalization have emerged in various academic fields (Flowerdew & Peacock, 2001). The recent development of information technology, high mobility and

networked information, for example, has changed the modes and skills used for effective academic communication, demanding students' multiple literacies including new modalities and visual literacy forms (Wallace, 2003:8).

Warschauer (2000:517-518) has also stressed the emerging roles of symbolic analysts, who "include software engineers, management consultants, strategic planners... and research scientists" in the 21st century. These workers and students in related areas spend a great amount of time analysing numerical and textual information and require new work skills for success, including "critical analysis, evaluation, experimentation, collaboration, communication, abstraction, system thinking, and persuasion" (Warschauer, 2000:518). All these skills are based on good communicative skills within a system of global networks.

Canagarajah (2006) raised questions of English competence, language identity and speech community, affected by the combining forces of digital technology and globalization. This radical social movement has led to a change of the notion of literacy because of the resources available in computer communication and the World Wide Web. He notes that "a proficient speaker of English today needs to shuttle between different communities," and suggests that the ESP profession "should teach strategies – creative ways to negotiate the norms operating in different contexts... rather than teaching rules in a normative way" (p.26-27). Recent innovations of technology and a changing society thus call for awareness on the part of EAP teachers of how the expansion of needs is related to communicative skills in academic sectors. EAP specialists suggest lines along which renewed EAP programmes may need to be redesigned for students who wish to take an active part in the contemporary and future global society.

To sum up, the skills-based needs of learners should be understood specifically along with the particular academic culture and conventions of the discipline in which the skills are used. Additionally, the practice of EAP teaching should encompass multi-skills, because skills interact during the information exchange process and students need to use integrative forms of literacy. Moreover, the recent

development of communication technology and the means of information exchange in academic sectors require new varieties of skills for students in the global era.

As the notions of skills cannot be divorced from sociocultural behaviours required for meaningful communication in the community (cf. section 3.3), the notion of learners' sociocultural behaviours must be related to learners' needs for linguistic skills. The following section will focus on students' needs for competence in sociocultural behaviours as a crucial aspect of globalization.

4.3. Needs related to Sociocultural Behaviours

In the current era of frequent border crossing, global interactions between nations and multicultural academic contacts, L2 students and lecturers may face a number of cultural disparities in behaviours in the local context as well as in the wider global community. This section firstly defines the terms 'sociocultural behaviours.' It next discusses students' needs related to these constructs, and then examines cultural theories which have the potential to address the sociocultural dilemmas in EAP classrooms, with special reference to the engineering discipline.

4.3.1. The Definition of Sociocultural Behaviours

The notion of culture is complex, and used in many different ways in the field of English language teaching (Atkinson, 1999; Hinkel, 1999). According to Jin and Cortazzi (1998:98), 'culture' refers to "socially transmitted patterns of behaviours and interaction... the frameworks of expectations and norms of interpretation through which... learning and classroom communication are mediated." Here culture is seen as shared patterns and norms of behaviours and experiences, and diverse and changing features of culture and power relations among participants in a community are not considered. These may reflect the unequal cultural dichotomy between the culture of the centre and that of the periphery (Kubota, 2004:45).

Based on an ethnographic study in a university in Hong Kong, Flowerdew and Miller (1995:346) attempted to identify four dimensions of a cultural framework in order to understand the notion of culture in the academic context. 'Ethnic culture' is related to "culturally based, social-psychological features which affect the behaviour of lecturers and students." 'Local culture' refers to "the local setting with which students are familiar and which may be alien to foreign lecturers." 'Academic culture' refers to "features... of the particular academic values, assumptions, roles and so on of a given society." 'Disciplinary culture' indicates 'the theories, concepts, norms, terms and so on, specific to a particular academic discipline." Despite their claim to extensiveness of four dimensions of culture in academic settings, Flowerdew and Miller's (1995) categorizations of culture are criticized because these are based on "a more or less static, unproblematic, homogeneous entity" (Atkinson, 1999:628).

Hyland (2000:8) used the term *disciplinary culture*, which normally "differ[s] along social and cognitive dimensions, offering contrasts not only in [individuals'] fields of knowledge, but in their aims, social behaviours, power relations, political interest, ways of talking and structures of argument." He conceives of disciplinary culture "not as monolithic and unitary," because it is "composed of individuals with diverse experiences, expertise, commitments and influence... with their myriad goals, methods and beliefs" (p.9). In contrast to Jin and Cortazzi (1998) and Flowerdew and Miller (1995), Hyland emphasizes a comprehensive and dynamic meaning of culture in a discipline, including power relations between socioculturally diverse members in the community.

This study discusses *sociocultural behaviours* within academic contexts. Underpinning individuals' behaviour are deep-rooted understandings of what is appropriate cultural behaviour in different contexts. Therefore the term, *sociocultural behaviours*, is broadly defined as the attitudes, study approach, norms of interaction, power relations, social relationships, value systems and expectations which permeate among members in academic contexts. For my purposes of this study, I borrow the terms of Flowerdew and Miller (1995), *academic culture* which

is influenced by the ethnic, local and educational cultures related to the practices of individuals or groups of students in local settings and the *disciplinary culture* which is linked with the globally shared conventions of the disciplinary community. Thus the notion of sociocultural behaviours considered in this study encompasses complicated dimensions of shared norms of disciplinary culture in the global academic community, as well as diverse local academic cultures in the local context. I will thus consider the use of term culture to consist of diverse, plural and changing identities and individuals (Hyland 2000), and the relations of disciplinary culture and local academic culture to be dynamic and fluid in global contacts (Singh & Doherty, 2004), rather than static and bounded. Therefore the academic practices of the group members in a disciplinary community may encompass the dynamic negotiation of shared as well as diversified aspects of cultures and behaviours.

4.3.2. Global Issues of Sociocultural Behaviours in EAP

Sociocultural competence and behaviours are important in all EAP contexts. In engineering, in particular, socialization and cultural awareness are crucial issues, because the English language and Anglophone conventions are dominant and as such accepted and shared by the engineering academic community around the world, as discussed in section 3.7.2.

Nevertheless, these cultural factors have often been neglected (Barron, 1991a), and EAP teachers hesitate to introduce issues concerning culture into the EAP teaching classes. This is because, as culture is seen as "implicitly and explicitly involved in every aspect" of teaching practices in the community, "this ubiquity fosters an unexamined, taken-for-granted, or commonsense construction of the term" (Atkinson, 1999 in Singh & Doherty, 2004:34). In addition, many hold to the view that science and technology, as the main EAP concern, are culturally "neutral" and have always represented "a supra-cultural domain" (Pennycook, 1997:259).

Therefore, while non-native postgraduate students tend to have a relatively high language competence according to repetitive language testing, their general awareness of L2 culture and their specific understanding of disciplinary culture may be quite low (Jin & Cortazzi, 1998). L2 engineering students tend to fail to recognize cultural assumptions in the disciplinary community, as the following statement by a Korean student at College U in my data shows:

> The cultural impact does not seem to be a critical factor to me. I think problems are caused mainly due to language itself rather than cultural effects... In science and technology fields, we rarely think that cultural problems arise. We are usually concerned about mere knowledge transfer and information exchange; therefore, I cannot see any cultural differences (US-4P).

However, the truth of the matter is that EAP is deeply related to various layers of particular local, ethnic, academic, as well as disciplinary cultures (Flowerdew & Miller, 1995). Students need to be aware of "the cultural assumptions and social practices of disciplinary communities in order to communicate effectively to their audience" (Canagarajah, 2002:30).

Consideration of sociocultural problems is justified because people often hold basic "social conventions, and norms of their own social appropriateness" (Kramsch, 1998b:6) in their local contexts, which may cause cross-cultural misunderstandings amongst members in the global community. For example, as a lecturer at College K mentioned, in Korea students are not expected to question and present ideas; people in a higher position are assumed to be always authoritative and should not be criticized over their knowledge and attitudes.

> In our culture, it is valued not to present oneself, question and show one's idea. So, Korean students do not want to come out with their findings. If someone highly positioned says something unclear, it is regarded as a good attitude that students presume and understand the hidden meaning without clarifying the ambiguity by further questions. (KL-2).

When Korean students who have maintained certain cultural assumptions throughout their education in Korea come to study in the UK, they may not easily

adapt to aspects of the new academic culture such as active participation and an informal relationship with lecturers. This may cause frustration for lecturers, as the following statement by a lecturer shows:

> The main difficulty is in the teacher/pupil relationship. They treat 'Professor' as always right, and will not challenge or argue on any statement... fear of losing face, in particular in a group meeting, or of making anyone else lose face. Asking a question implies someone is at fault for not either explaining or understanding what is proposed (UL-Q).

Furthermore, since engineers share conventions and disciplinary culture in the global community, L2 engineering students may suffer from a cultural disjuncture between the internationally dominant culture and their local culture. This is because the globalization of a norm of interconnectivity between nations tends to make minority communities and local academic cultures occupy a marginalized status. As Seabrook (2006) states:

> By definition, globalization makes all other cultures local. But to billions of people all over the world, their culture is not local. It is central to their lives and who they are. Globalization eclipses, or at least subordinates all previous ways of answering needs and of dealing with the vicissitudes of human life.

Globalizing forces therefore challenge local languages and cultural identity (Graddol, 1997). Because of the global cultural flow and frequent contact with other national groups of engineers, L2 engineering students and lecturers may experience sociocultural conflicts over their behaviours. One of the ways in which this manifests itself is in the fact that Korean engineering students and lecturers in Korea are self-critical about the domestic academic culture, and adopt deficit views of it. They often do not fully understand the differences in cultural norms and expectations between the global community and the local context, or they easily assume 'a received view' (Atkinson, 1999) of foreign cultures.

Moreover, students who are studying engineering are nowadays expected to participate in numerous academic practices and to manage diverse sociocultural encounters with other engineers from various nationalities in multicultural academic contexts. Also, they sometimes have to communicate with non-

professional lay people in order to market their products or to solve problems in real-life settings. For example, when engineers build and design a bridge in a foreign country, they may need to investigate thoroughly the natural resources and energy of the area, and the way of living, value system and culture of where they are working. Engineers thus need to communicate with local people, understand the local way of life and sensitize themselves to cultural differences when they apply their knowledge to real situations.

Therefore sociocultural needs are best seen as pervasive, saturating the whole language learning process, rather than as indicating a set of procedures that students need to overcome after achieving a certain level of language competence and skills. These complex and intractable social demands for global contacts in multicultural academic settings raise issues and develop cultural theories over what is the best way to promote the well-being of L2 engineering students in the academic community. EAP researchers have attempted to come to grips with the specificity of such sociocultural challenges by using a variety of qualitative research methods. EAP has attempted to make itself more sensitive to the needs that are related to the different sociocultural backgrounds and expectations of its students as well as to the contexts in which non-native students are using English in the classroom, or in the wider academic community.

4.3.3. Cultural Theories in EAP

Given that EAP has to take account of numerous cultural factors which affect L2 students, the field of cultural studies has developed theories and terms in EAP to explain such cultural complexity and to facilitate communication between people who do not share nationality, social origin, expectations, or ways of thinking during global contacts (Kramsch, 1998a:7). I will investigate some of the major theories of culture and related studies in academic contexts, and argue that 'critical awareness' is most desirable for L2 engineering students in the era of globalization.

4.3.3.1. The Study of the Target Culture

In the first place, EAP has been understood as bringing the target disciplinary culture to L2 students, in order for them to acquire the culturally 'appropriate' behaviours and dispositions, and to facilitate their becoming members of the community. EAP practice has typically remained "pragmatic" (Allison, 1996) to provide the maximum possible support, aiming for an efficient and cost-effective approach and adopting target disciplinary culture in EAP classrooms. The dominant use of English and Anglophone culture of the science and technology fields has been adopted as a target culture in teaching EAP, because students may need to learn this culture in order "to capture the idea of like-mindedness, in joining writers and texts and readers together" of the disciplines (Hyland, 2003:25). Research into EAP target discourses, such as research papers, content textbooks and lectures, has proliferated from the beginnings of EAP linguistic inquiry. EAP specialists have attempted to detect a distinctive variety of scientific language in terms of lexis, rhetoric, syntax and genre levels (Swales, 2001; cf. section 3.7.2). These features of language use and disciplinary conventions have guided the construction of EAP teaching materials as the target disciplinary culture.

In taking cognisance of the role of English as the medium of instruction and communication in science at universities in India, Jacob (1987) suggested that students need to be 'culturally competent' members of the international scientific community. For this author, the cultural competence to be conveyed in the EAP curricula meant elaborating appropriate intellectual processes, attitudes, values and knowledge as expected in the target academic community. Considering that L2 students' assumptions are different from expectations in English-dominant countries, Bloor and Bloor (1991) described the 'misguided' L2 students' writing conventions which they use in UK universities. They described the issue of academic writing which has caused cross-cultural discrepancy, in terms of formal requirements, plagiarism and acknowledgements, directness and concessions and the use of rhetorical structures. Ballard and Clanchy (1984 in Ballard, 1996) also suggested that students need to adopt certain habits of thinking, studying and

learning based on Western academic culture; they proposed that Asian students should be aware of differences between their own learning styles and the demands of the target educational systems of English-speaking countries where they are planning to study. By using ethnographic 'thick' descriptions, McKenna (1987) attempted to describe the processes of question posing in lectures and discussions employed by native students in US university classrooms. She suggested using the information gained from native speakers as target needs in implementing EAP courses for non-native learners.

However, these proposals were naïve, because L2 learners cannot be encouraged to simply take on the behaviours of native speakers. In some cases, L2 students can use better English in special areas, and 'literate English' is not a province only of native speakers (Wallace, 2002). Such studies impose on the L2 learners the need to move from the norms of the source to that of the target culture. Non-native students, from a different cultural background, may have difficulties in identifying with and relating to the new academic communities. This is particularly true because the innate culture of the students cannot be easily changed, as Byram and Morgan (1994:43) state:

> Learners cannot simply shake off their own culture and step into another... their culture is a part of themselves and created them as social beings... Learners are 'committed' to their culture and to deny any part of it is to deny something within their own being.

For this reason, despite the pressures of universal access, instrumentalism and global communication, there have been criticisms of the current dominance of the Anglophone academic culture in EAP. Likewise, EAP has been criticized as possessing some of the negative aspects of linguistic imperialism (Phillipson, 1992), overpowering forces (Swales, 1997) and elitism (Kennedy, 2001; Master, 1998). The process of attempting to discard their home culture often causes students problems, such as a loss of self-identity and emergent emotional obstacles to learning the language of dominant cultural systems. As a response to these criticisms, other approaches to EAP have been discussed, which I turn to next.

4.3.3.2. Incorporating the Students' Culture

The influences of culture upon interaction and communication have impelled EAP teachers to acknowledge L2 students' culture as resources and thus bring their knowledge and expectations into EAP classrooms. Barron (1991a) examined the sociocultural context of Papua New Guinea, and argued that, since many local cultures associated with the technology of engineering are an active part of local cultural life, the exclusive teaching of a Western-based approach may result in the loss of valuable indigenous technology and culture and students' disorientation in the class. In the same way, in Korea, the adopted Western engineering knowledge may have led the Korean academics to feel that their academic basis and the study approach within engineering have become vague and superficial (see Chapter 2).

Barron suggests, therefore, that EAP lecturers should provide L2 students with the opportunity to use their own content and knowledge from local countries as resources for English learning, in order to be more motivated, while maintaining the accepted international standards of scientific rhetoric and textual patterns. Additionally, EAP teachers can attempt to make explicit the possibility of a transition from the use of cultural artefacts in local languages towards the textualization of spoken and written English, in order to accommodate the local technologies as global assets. It may be desirable to use the local content and knowledge of learners as a valuable resource in EAP programmes, both for the purpose of more efficient English teaching and to ensure a wide knowledge and technological base for the development of the subject fields.

Over the years, EAP researchers have attempted to compare the textual characteristics of the languages of L2 students with the characteristics of the target texts in the EAP classroom. The major impetus for this attempt was the concept of contrastive rhetoric, which explored the differences between texts in English and the mother tongues of non-native students (Connor, 1996; Kaplan, 1966; Mauranen, 1993a). Mauranen (1993a) has suggested that members of minority cultures should be allowed to utilize their own L1 rhetorical preferences when writing English

academic texts, because "the coexistence of several rhetorical traditions in the international academic community is probably healthy" for EAP teaching and learning (p.263).

Zamel (1997:344) proposed a model of transculturation in writing texts. She argued that "individuals can transcend the boundaries of each of their languages" through "the very complexity of struggling with languages and their dynamic interplay" (p.346). It suggested that L2 learners can generate writing in English by connecting their literacy background in their home language with the new acquisition of English, through overlapping disciplinary discourses and plurality within community. However, although these ideas regarding rhetoric and the discourses of formal texts may be an option in the humanities or social science disciplines, engineers seem to prefer to retain distinctive international engineering rhetorical structures and the existing conventions of the discipline, particularly in formal written genres, as noted in section 3.7.2.

A distinctive literacy and culture thus seem to be dominant in the academic community, and minority cultures still occupy a marginalized status. Yet there has been a concern for mutual understanding to solve cultural conflicts between nations or individuals who have contrasting expectations and behaviours, as discussed below.

4.3.3.3. Intercultural Competence

In a multicultural and multinational world, the concept of the *intercultural speaker* has become widely debated (Byram, 1995; Kramsch, 1998) and gained considerable respect among L2 students, EAP teachers and subject lecturers working in multicultural contexts. Recognizing the culturally rooted norms and attitudes of different nationalities, lecturers and students have been encouraged to understand their own culture as well as the variety of different cultures represented in the class, in order to lead to better interaction and mutual respect.

Thorp (1991) expressed concerns about a negative picture of Asian students being built by EAP staff in the UK, due to the effects of culturally different norms of interaction. Thorp suggested that EAP teachers should have a cultural awareness of their own norms for interaction and make the interactive demands of their classes more explicit. The language class could then be expected to "serve as a bridge or safety net" (p. 117) between students and the academic world. J. Jones (1999) examined culturally rooted perceptions of silence and reticence in Asian cultures and the nature of group discussion in Australian universities. Moving beyond a concern with language difficulties, he claimed that cross-cultural awareness should be encouraged for both teachers and students. Non-native students need to be aware of how the values and beliefs inherent in the group discussion situation may differ from those of their local culture, and of their need to develop interactional skills which enable active contribution. Native-speaker teachers also need to understand more clearly the difficulties which non-native students face, and encourage students to participate actively in discussion. Myles and Cheng (2003) reported the difficulties of international postgraduate students in adapting to the social and academic situations at a Canadian university. They suggested establishing EAP courses to facilitate students' and professors' intercultural interactions in a multicultural environment.

Kramsch (1993:227) raised the notion of cross-cultural awareness in particular disciplinary areas, and argued that one of the reasons why cross-cultural transactions were significant was the work of specialists through multinational cooperation:

> the culture of business and technology, claimed to be universal, is often believed to provide bridges across all other cultures... While it is true..., it would be wrong to believe that expertise has the same social, intellectual, and emotional value around the world... technological experts too are dependent on culture-bound perceptions. Thus, cultural differences in the way engineers solve problems are rooted in different intellectual styles and schools of thought promoted by different educational cultures.

Kramsch seemed to suggest that to cope with their discipline students need to be aware of both the globally shared disciplinary culture and the locally rooted academic culture. For engineers, it is important to communicate with engineers or others from various nations and apply scientific theory and knowledge to emerging problems in different local contexts (section 3.7.1). Engineering students may need to have intercultural competence as well as knowledge of their disciplinary culture.

Additionally, Jin and Cortazzi (1998) have proposed a cultural synergy model which might foster the mutual understanding and intercultural competence of teachers and students. They argue that intercultural competence is needed by advanced students in EAP contexts "to raise their consciousness of the typical variables which make up a culture of learning and communication" (p.118). Especially in this contemporary multicultural world, given that all cultures are valuable and should be respected, an intercultural perspective of mutual understanding and respect towards other cultures was suggested as a valuable norm to be promoted among members.

Nonetheless, the "humanitarian" notion of intercultural competence is criticized, because it presumes "the existence of cultural differences between groups... As such, it assumes a homogenous and stable culture that forms a unique communication style in each culture" (Kubota, 2004:45). Moreover, the dominant culture and conventions are assumed as a norm in the community, so that mutual acculturation among members is difficult to achieve within the concept of intercultural competence. This circumstance may cause inequality within the community, which raises issues concerning critical views of culture, which are discussed in the next section.

4.3.2.4 Critical Views of Culture

There is a wide discussion of critical perspectives in the literature. For my research purposes, I will draw on literature of critical views that are relevant to the concerns

of my thesis. In drawing attention to cultural differences between L2 students and the target academic community, students and lecturers are prone to building a set of cultural dichotomies between the East and the West. Kubota (1999) criticises these essentialized cultural labels and stereotypes, and suggests the need for *critical multiculturalism* and critical acquisition of the dominant language and culture. Students should apply critical thinking rather than simply assume that one of the cultures is unquestionably better or different in a stereotypical way.

East Asian students are often regarded as introverted and passive in the classroom. This is thought to be because they have been educated mostly in the Confucian tradition of teacher-centred lessons and large classrooms (Scollon, 1999). These non-native students are considered simply to accept unequal power relations in academic situations, allowing the institution's or lecturers' requirements to dominate. Students tend to have internalized legitimated standard forms of English literacy and of the behaviours of Anglophone native speakers, due to "oppressive forces that... operate in various spheres including education institutions, textbook industries, and mass media" (Kubota, 2004:47-48). In an attempt to identify the features of sociocultural interactions between L2 undergraduate students and faculty in US education, Leki (2006) observed that students tended to try to deal with the relationships with the faculty by unquestioningly accepting teachers' authority, in ignorance of faculty's expectations. This situation is obviously undesirable, not only for the students' own academic development, but also for the lecturers who expect students to participate creatively and critically in the classroom, workshop or other places, as parts of the academic community.

In this regard, Canagarajah (2002) suggested a *critical contact zones* perspective as an ideologically desirable approach in the age of globalization, as students hold diverse values, philosophies, ideologies and memberships in multiple communities.

> Language learning cannot be considered an entirely innocent activity, since it raises the possibility of ideological domination and social conflict. Teachers should therefore attempt to critically interrogate the hidden curricula of their courses, relate learning to the larger

> socio-political realities, and encourage students to make pedagogical choices that offer sounder alternatives to their living conditions (Canagarajah, 1999:14).

Here students with multicultural identities are "encouraged to adopt diverse and creative strategies of communication to construct" (Canagarajah, 2002:40) their knowledge, so that they develop their own critical cultural awareness in complex multicultural academic settings and can challenge the reified cultural assumptions and unequal power relationships between members of disciplinary communities. However, Canagarajah's notion of critical multiculturalism seems to be radical and impractical because students are hardy able to choose the pedagogy which they need in their learning contexts and have to acquire the knowledge of disciplinary culture as a condition of becoming members of the community.

EAP is often blamed for aiding compliance with the dominant culture on the premise of pragmatic concerns (section 4.3.3.1). Accepting the critique of the conservative EAP stance, Pennycook (1997:263) calls for *critical pragmatism* and *critical awareness* which help students to develop "forms of linguistic, social and cultural criticism," beyond the needs of the specific target discipline. He claims that rather than meeting the apparent needs of the students for academic linguistic skills the means for creating "continuous reflexive integration of thought, desire and action" (p.266) is necessary. Moreover, Singh and Doherty (2004) have considered the dilemma of EAP teachers in Western multicultural classrooms as the main sites of the cultural processes of globalization. For Singh and Doherty, the tightly bound stereotyped notion of culture no longer informs global pedagogic practice adequately. They thus suggest EAP teachers' "critical engagement" (p.21) in order to make learners active and reflective agents in the ongoing construction of social reality. The critical cultural awareness and reflective thinking of both students and EAP teachers are desirable in the global age, as the community is changing and becoming more diversified and multicultural.

Benesch (1993, 2001) also suggests that EAP professionals need to develop a *critical EAP pedagogy*. In the pedagogy, L2 students' ideological positions are accepted, and students are to be "both pragmatic and critical grounded in the

demands of students face but open to the possibility of challenging them" in an academic context (Benesch, 2001:xvii). It may allow students to face power relationships, "to consciously engage in academic life" and to increase their participation in the academic communities of practice (xv). This pedagogy is profitable because both non-native students and EAP teachers are encouraged to have critical cultural awareness and flexibility in developing students' self-initiated learning and in taking more equal roles in the discipline and in the wider community.

Given the current rapid social shift towards global integration among community members, the multicultural milieu, the development of information technology and the global dominance of English and its culture, L2 students face a wide range of requirements in terms of communicative skills and sociocultural behaviours within the disciplines as well as in the outside world. In the following section, I will conclude this chapter by discussing these emerging needs of students and the role of EAP pedagogy in the era of globalization.

4.4. Unity and Diversity of Needs and the Role of Critical EAP/EEP

In this time of dynamic and fast-changing societies, people may cross local boundaries to suit the social practices, interests and cultures of specific communities at the international level. Academic communities are thus rapidly becoming zones of global multicultural contact, in which various nations communicate, collaborate, integrate and share common academic purposes and interests (see section 3.1). As a result, the commitments to disciplinary conventions and multicultural academic environments force L2 students to confront a variety of demands for communication skills and sociocultural behaviours throughout their academic lives.

First of all, L2 students are expected to be sensitive to and acquire the shared conventions and dominant forms of communicative skills in the global disciplinary community. As junior members, students may need to understand social practices, cultural assumptions, discipline-specific literacy, insider knowledge and particular patterns of English use (Wood, 2001:82) in order to communicate effectively in the disciplinary community.

At the same time, in this diversified and unpredictable academic world, students are involved with diverse types of social communications with colleagues, tutors, technicians, local people, sponsors and friends, in formal meetings or informal social gatherings; these circumstances may require multicultural flexibility, critical negotiation and creative resistance. All of these types of communication are particularly emphasized for engineering students, because engineering, as a communication-based discipline (section 3.7), requires students to communicate with other engineering experts or non-experts from various contexts, in order eventually to "meet society's needs for the systems" (Donald, 2002:62).

In other words, L2 students of engineering need to acquire shared disciplinary conventions and literacy within the community, as well as to engage with diverse cultures, in order to be truly efficient engineers in contemporary academic society. These unifying as well as diversified needs of students should be considered as supporting each other, rather than as contradictions or "as a dichotomous choice" (Pennycook, 1997:265). This is because without accommodating the unified language, skills and shared knowledge as members of the global community, diversity and individual creativity are limited. Additionally, the academic community, sharing common facilities in the context of globalization, cannot be sustained without creative individuals and ideas which derive from diverse local contexts. The diversity and constructive resistance which each member brings to the community makes the community richer and healthier.

Given these complex requirements for communicative and interactive skills in the engineering community, it is important for students to have *critical awareness* and *flexibility,* and to reflect continuously about their thoughts and culture (Pennycook,

1997). Rather than passively accepting the dominant academic culture and the international, or Anglophone, disciplinary expectations of the community, or only possessing self-criticism of their own culture, L2 students need to be critically aware of the dominant power and to foster more self-initiated learning. Accepting these "cultural and intellectual challenges" (Benesch, 2001:14), they can participate more critically and creatively in the academic practices. This is because academic contexts are hybrid, multicultural and constantly changing (cf. section 3.7.3). Therefore academic communication and the building of identities within the community requires flexible participation, cultural sensitivity, critical engagement and negotiation with cultural values and literacies in diverse societies, internally as well as across nations.

These requirements suggest that the roles and the responsibility of EAP are significant in promoting critical awareness as well as sensitizing students to the their commitments to disciplinary conventions, so that L2 students can be genuine participants in the global community of practice. They need to be both "pragmatic and critical," accommodating "stability and change" (Benesch, 2001:xvii). "Critical EAP helps students articulate and formalize their resistance, to participate more democratically as members of an academic community" (Benesch, 2001:61). Therefore Pennycook (1997:265) claims that EAP teachers should "work with both" the unity and the diversity of needs:

> On the one hand, we need to help our students gain access to those forms of language and culture that matter while on the other we need to help challenge those norms. On the one hand we need to help our student develop critical awarenesses of academic norms and practices, while on the other we need to understand and promote culturally diverse ways of thinking, working and writing.

This kind of EAP has positive implications for L2 students, because it encourages people to communicate, cooperate, negotiate and sometimes resist for the sake of their own interests and development. EAP could offer a way of bridging the global world order with local ideologies. EAP can moderate the tension between global expectations and local demands, by furthering the opportunities for all students who

wish to take part actively and critically in shaping the global legacy. EAP can encourage L2 students to communicate effectively as members of the international disciplinary communities, accepting their international responsibility for both local and global expectations.

As globalization has raised new demands for local academic cultures and skills to attain international levels and for people to share various cultures (Green, 2002), English as an international language and EAP have the potential to "help students succeed" in the academic community (Tardy, 2004:263) while promoting educational cooperation and inter-reliance between nations in the world. Having said that, it is important that EAP leads students to take advantage of their multicultural environment, viewing it as an asset, and seeking to be flexible and critical of the global world order, while maintaining their own values and identities. As Warschauer (2000) puts it:

> If the central contradiction of the 21st century is between global networks and local identities, English is a tool of both. It connects people around the world and provides a means to struggle and to give meaning to those connections. If English is imposing the world on our students, we as TESOL [EAP] professionals can enable them, through English, to impose their voices on the world.

In this regard, EAP practices for L2 students need to be appropriate to both the local context and the global community, because EAP is for all kinds of communication, which serve students' individual needs as well as global interests.

In this chapter, I have explored the meanings of needs, particularly perceived needs, in EAP in the global age. I have also discussed two dimensions of needs for L2 students in the global disciplinary community, skills-based needs and needs for sociocultural behaviours. EAP teachers need to encourage students to have discipline-specific literacy, multi-skills and the newly emerging skills which they require to be members of the disciplinary community. Additionally, L2 students should learn how to deal with a multicultural and changing academic society with critical awareness and flexibility, in combining unified access to discipline-specific

literacy as well as the negotiation of diverse sociocultural behaviours in multicultural academic contexts.

Globalization has expanded and diversified students' needs as they participate in the global academic community. The aim of the present research is to interpret the perceived needs of Korean postgraduate engineering students regarding the importance of English, skills and sociocultural behaviours in the light of globalization by means of comparing how these are understood in the UK and Korea. The following chapter will explain the two research settings and the research methods that I have pursued in this study.

Chapter 5. Methodology for the Research

In Chapters 3 and 4, I explained that EAP and needs analysis should be placed in wide theoretical contexts including sociocultural behaviours as well as skills in order to help students in the era of globalization. The aim of the present research is to interpret and compare data relating to the perceived needs of Korean postgraduate engineering students in two institutions in Korea and the UK. It is suggested that the comparative exploration of perceived needs of students in the two contexts may be of use when planners are innovating EAP programmes in Korea in the future. Because the main purpose was researching the 'overall' needs of students as perceived by themselves and their lecturers, rather than their specific 'course needs' (Dudley-Evans & St. John, 1998), this research approached the topic with a wide view of needs in mind. For this reason, three categories of perceptions were considered (cf. section 1.4): *importance of English, needs relating to language skills and study skills* and *needs relating to sociocultural behaviour*. The concrete research questions formulated on the ground of the issues were as follows:

1. *How far and why do students and lecturers perceive English as important in order to enable Korean postgraduate engineering students to succeed in academic contexts?*
2. *Which English language skills and study skills do they perceive as crucial for students, and why?*
3. *How do they perceive the problems of students' sociocultural behaviours, and why?*
4. *In all these enquiries, what similarities and differences can be observed in the perceptions of students and lecturers across the UK and Korea?*

I believe that my own position as an engineering researcher in Korea and L2 postgraduate student studying TESOL in the UK lends credibility to the claims I

intend to make regarding the need to broaden the areas of EAP study. Drawing on my own experience as a Korean non-native speaker of English with a background in engineering, I attempted to use appropriate strategies and approaches to data collection.

Firstly, I had to deal with complex aspects of participants' *perceptions,* which include individuals' psychological aspirations and social relations as they problematize target situations (cf. section 4.1.2). Participants' perceptions may be changeable or hidden, depending on the predefined categories in questions (Cooper & Bikowski, 2007) and on tacit rapport with interviewers. Therefore identifying perceived needs from informants requires a deep understanding of their situations and problems and mutual trust between researchers and informants. My insider's view of the engineering discipline helped me to meet these requirements (see section 5.4.2).

Secondly, as the participants were engineering postgraduates and lecturers, it was difficult to access participants and to have enough time to collect data. Therefore both questionnaires and semi-structured interviews were chosen, to triangulate the findings. This approach was meant to provide a systematic and expansive set of data in a relatively short time period (see sections 5.3 & 5.4.1).

Thirdly, I had to compare perceptions from four different groups of participants in two institutions in the UK and Korea. The two contexts seemed to be not only similar, because both are engineering institutions sharing disciplinary culture, but also different, because the institutions were expected to have different local, academic, institutional and social expectations and values. How to elicit balanced and comparable data incorporating my research questions in seemingly different contexts was my challenge in this study, which was eventually managed by accessing participants flexibly (see section 5.4.3).

In this chapter, I will describe the two sites of data collection for this study, and clarify the participants, instruments, the tactics used for my data gathering procedures and analysis, and the relevance of research ethics.

5.1. Two Locations of the Study

For the purposes of the study, two academic institutions — College K and College U — were chosen. This was not only because these institutions were considered comparable as elite institutions in the fields of engineering in Korea and the UK, but also because both are easily accessible to me. While studying for my doctorate in London, I was able to meet many Korean engineering students at College U. In addition, I had previously worked at College K as a chemical engineering researcher. For this reason, I had already established cordial relations with the faculty members at College K. Although I described the general educational background of science and technology universities in Korea in Chapter 2, this section will focus on particular features of College K and College U related to my study, such as the objectives of the establishment, disciplinary areas, educational systems and English programmes.

5.1.1. College K, Korea

Originally founded by a special act of the Korean Government in 1971, College K, which is part of the Ministry of Science and Technology in Korea, offers a postgraduate school-oriented curriculum. Nearly two-thirds of its courses are aimed at postgraduate students. As a result, College K is research-intensive. The College of Engineering consists of eleven departments of study; these are for Chemical and Bio-molecular engineering, Civil and Environmental engineering, Electrical engineering, Computer Science, Materials science and engineering, Aerospace engineering, Mechanical engineering, Automotive Technology, Industrial engineering, Industrial Design and Nuclear and Quantum engineering (College K website). The educational system and course offer follows the US system, where M.Sc. and Ph.D. students study together based on taught course programmes.

The official objectives of College K are to nurture highly qualified scientists and engineers who can lead and serve the nation through their expertise in their chosen fields, to support Korea's industrialization, to perform mid- to long-term basic and applied research for domestic development, to provide a research platform for other

industrial institutions and to promote international competitiveness. It has aimed to intensify these processes, especially to prepare for the technology-driven society of the 21st century in Korea (College K website).

In 1992, College K was evaluated by the Accreditation Board for Engineering and Technology (ABET), a US organization that evaluates the academic system of science and engineering programmes. College K was recognized as a high quality educational institution equivalent to the upper 10% of US universities. Both in 1999 and in 2000, *Asiaweek* magazine ranked College K first among the top science and technology universities in Asia. [Since 2001, this magazine has not carried out the same evaluation.] The university aims to improve its position by the promotion of interdisciplinary education and research, and the development of technologies and of a center for the global exchange of education and ventures.

The major research projects of College K are 'Brain Korea 21' (BK 21) and 'Vision 2010'. On the basis of the BK 21 project, which aims for globalization as an emerging issue starting from 1999 (Chapter 2), College K has planned to recruit a large number of world-class faculty members and foreign students. As a result, the number of foreign faculty members and students is growing fast. In February 2004, College K had only 20 foreign faculty members, 23 foreign students and 18 foreign post-doctoral students (personal communication with an officer at College K). In September 2006, 162 foreign students, including 78 on Master's courses, 79 on Doctoral courses and 5 on undergraduate courses, were studying at College K (Chosun Daily Newspaper, 2006). These figures indicate that during the last two years the population of foreign students has increased fourfold. Foreign students are mostly from Asian countries (89.8%). Among them are Chinese (61.7%), Japanese (11.4%), American (4.5%), Vietnamese (3.6%) and Taiwanese (2.9%), and they participate in English-medium lectures (Chosun Daily Newspaper, 2006). This situation signals the growing phenomenon of globalization in the science and technology academic sectors in Korea, as noted in Chapter 2. College K has also attempted to promote cooperation with universities abroad.

A great number of students' research papers are published in international journals in English. This is because since the beginning of the BK 21 project, Ph.D. students

are required to publish at least one paper in international journals listed in the Science Citation Index (SCI) in order to acquire the degree (code of practice for Ph.D. students at College K), and they normally present more than once at international conferences. M.Sc. students do not need to publish and present in international journals or conferences, although, if the quality of their work is good, they are allowed to do so (personal communication with an officer at College K, in November 2007).

The Vision 2010 project includes more detailed plans for internationalization, encompassing extensive invitations to internationally well-known scientists and engineers. These plans involve a new emphasis on the importance of English. For example, while only about 10% of postgraduate lectures had been offered in English for nearly 15 years, all subject lectures for undergraduate freshmen started to be provided in English from 2007 (Chosun Daily Newspaper, 2006, confirmed by personal communication with an officer at College K in March, 2007).

Nonetheless, in general, students have poor English competence, which causes great difficulties in their academic tasks in English. This is because College K does not ask gifted students in the fields of science and technology to show any evidence of their English capability for both postgraduate and undergraduate courses. The majority of entrants are second-year students from science-specialized secondary schools. They are admitted into the college through entrance examinations, but because the secondary schools place a strong emphasis on science and technology, most students arriving at College K have received a poor English education. Postgraduate candidates are required to submit reports of English test scores higher than PBT TOEFL 560/ CBT TOEFL 220/ IBT TOEFL 83/ TOEIC 775/ TEPS 690/ IELTS 6.5, although scientifically specialized candidates are exceptionally admitted with lower scores in the English tests.

In 1995, in an effort to improve the English proficiency of students, the Language Centre at College K was established. The centre offers a variety of language programmes including English classes and intensive English immersion programmes, an English editing service and a Korean-English translation service. Since 2001, EAP courses such as English science writing and presentation skill

classes have been provided. However, these courses generally have a low attendance, and attract fewer than 100 students per semester (personal communication by a Language Centre lecturer, 2004). This low attendance may be related to the current general problems within EAP programmes in Korean universities, as described in section 2.3. That is, students' priority remains work for their engineering subjects, and students may not be fully aware of the urgent needs for them to make progress with English courses. In addition, most EAP courses are optional, rather than mandatory for students, and an extra fee must be paid.

5.1.2. College U, the UK

First established in 1907, College U is one of the most famous institutions worldwide in the field of engineering, science and medicine. The faculty of engineering consists of ten departments of study; these are for Aeronautics, Bio-engineering, Chemical engineering, Chemical Technology, Civil and Environmental engineering, Parc (Planning and Resource Control), Electrical and Electronic engineering, Materials and Mechanical engineering.

In an attempt to sustain an education-intensive and research-led orientation, the college's research committee sets the strategic direction for many research projects. College U pursues engineering research and teaching as a centre of excellence by facilitating a range of academic activities, in order to meet the changing needs of society and industry, to attract and develop the most able students and staff worldwide, and to communicate widely the significance, purposes and benefits of academic activities in engineering (College U website).

In 2004-2005, the number of overseas students (excluding home and EU students) stood at 2,959 or 26.5%, of whom 1,870 were undergraduates and 1,089 were postgraduates. In 2003-2004, 30 of these overseas students were Korean postgraduates, 23 of them in the engineering departments and 7 in the science departments. There were also 57 Korean students studying at the undergraduate level. Most Korean engineering students are studying in either the Electrical and Electronic engineering or Mechanical engineering departments (College U Korean

Society website).

M.Sc. degrees are awarded on the basis of the results in examinations consisting of both written papers and the submission of a dissertation or report following a one-year course of advanced study. The M.Sc. courses are mostly offered with lectures in taught modules. The Ph.D. is the research degree, and candidates are required to submit a thesis and to be examined orally. The courses normally include face-to-face individual or joint supervisions. Therefore the M.Sc. and Ph.D. courses run very differently in terms of tasks, operating systems and practices.

College U requires *all* overseas students to have full command of the English language. In order to ensure that this requirement is met, the individual student must normally take an English language test such as IELTS and TOEFL and achieve an acceptable score before admission to undergraduate and postgraduate courses. Some requirements are also applied when students transfer from the M.Phil. to the Ph.D. programme. For IELTS, a score of not less than 6.5, including a score of more than 5.0 in writing and speaking in the academic test, is required. For TOEFL, a score of not less than 90 overall in the IBT, to include 24 in writing and 20 in speaking, is necessary, whilst 600 in the PBT, or 250 in the CBT are deemed acceptable. Both of these are to include a minimum score of 4.5 in the written English component. These are the minimum requirements for admission to College U. In the past, English writing skills used to be of immense importance to overseas students at College U, but now the college emphasizes both writing and speaking skills as admission requirements.

Those students who fall marginally below the entry requirements are accepted for a pre-sessional course (five weeks to eight weeks duration) on condition that they pass an exit test. The course places particular emphasis on academic communication skills needed to embark on postgraduate courses, such as understanding and writing academic English, speaking clearly and confidently and brief spoken presentations. In addition, during the academic year, all postgraduate students are assessed by the college's English support units after initial registration and at transfer from M.Phil. to Ph.D. programmes. This assessment may specify attendance at a variety of in-sessional programmes (free of charge) to support

overseas students, with the aim of promoting the appropriate skill such as writing a thesis or oral presentation. The college has taken this step in order to ensure that Ph.D. candidates are properly prepared to write their thesis and to defend it in the *viva voce* examination (College U website).

5.2. Participants

Successful needs analysis depends on the careful and appropriate sampling and targeting of the participants (Cohen *et al.,* 2007). The subjects surveyed for this analysis of academic needs in English comprised four groups of participants. Information about these four groups is shown in Table 5.1. [The role of each group of participants in this study is described in section 1.5.] Since both College K and College U are internationally well-known institutions, it may be safely assumed that all the students and lecturers are highly talented and have scholarly motivation in their fields of engineering.

Table 5.1. **Four Groups of Participants**

	Korea	**UK**
Students	Korean engineering postgraduate students at College K ***<KS>***	Korean engineering postgraduate students at College U ***<US>***
Lecturers	Engineering lecturers at College K ***<KL>***	Engineering lecturers with some kind of academic relationship with the Korean engineering students at College U ***<UL>***

At the beginning of the data collection, I targeted each of the Korean engineering postgraduate students and the engineering lecturers who were studying or lecturing at both colleges. At College K, ultimately, 156 sets of questionnaire data were obtained from the Korean students. From those who completed the questionnaire participants, 21 students were selected for interviews. In addition, 34 sets of questionnaire data and 14 sets of interview data were collected from the engineering lecturers at College K (Table 5.2).

At College U, the total population of Korean postgraduate engineering students and engineering lecturers was quite small. In total, there were only 23 Korean

engineering postgraduate students registered at the college in the academic year 2003-2004, as shown before (section 5.1.2). For this reason, the number of lecturers who had an academic relationship with one or more Korean postgraduate students was assumed to be small too. Therefore I first attempted to survey all of those students who were the members of the College U Korean society and their supervisors or lecturers. From the 16 students who completed questionnaires, I obtained 15 sets of interview data through face-to-face encounters. I was also able to collect 15 sets of questionnaire data and 5 sets of interview data from the lecturers at College U (Table 5.2).

Table 5.2. **Total Numbers of Participants**

	KS	KL	US	UL
Questionnaire	156	34	16	15
Interview	21	14	15	5

NB. The interview participants were selected from the list of people who responded to the questionnaires.

Tables I through to VIII (Appendix I) provide detailed profiles of the four groups of questionnaire and interview participants. The KS respondents were all Korean and studying in a number of different engineering departments, with the populations of the M.Sc. and Ph.D. course levels being quite similar. The number of postdoctoral students, however, was very small. Many students had stayed less than one year in an English-speaking or other foreign country (35.3%) and most had remained in Korea (60.3%) (Table I).

The majority of the KL questionnaire participants was located in either the Aerospace or the Mechanical engineering departments, and had varying years of teaching experience at College K (Table III). Apart from one KL questionnaire respondent from India in the Aerospace department, all KL participants in the questionnaire and interview were Korean. The KL interviewees had supervised or taught at almost all student levels for a variety of periods: less than a year (1); 5-10 years (1); 11-15 years (2); 16-19 years (5); more than 20 years (5) (Table IV). Apart from one lecturer (KL-1), all the KL interviewees had taught only in Korea.

Most of the US participants in the questionnaire were studying in the Electronic or Mechanical Engineering departments at the Ph.D. level (Table V). The participants for the interviews were the same as for the questionnaires, apart from one Ph.D. student in Constructive and Environmental (Civil) engineering (He was not interviewed). All were Korean, and their length of stay in either the UK or another foreign country ranged from 6 months to 15 years, with the majority having studied in the UK for more than 2 years (Table VI).

The UL participants in the questionnaires were working in six different departments, but mostly in the Mechanical engineering department. Each of them had been supervising M.Sc. and Ph.D. level Korean students for at least 2 years (Table VII). The nationality of each ULs questionnaire participant was not clearly identified, because I did not ask it in the questionnaires; presumably they were from Britain as well as other countries. Of the five ULs who were interviewed, three lecturers were from Britain, and two were from Spain (UL-1) and India (UL-4), respectively. Four were working in the Mechanical engineering department and one (UL-5) was in Materials. Two lecturers had an academic relationship with Korean Ph.D. students, two had relationships with both Ph.D. and M.Sc. levels and one had been working with M.Sc. students for a number of years (Table VIII). As engineering is discipline dominated by males, all the participants in my study were male, except one or two female questionnaire respondents among KSs. To differentiate M.Sc., Ph.D., and Post Doctor levels in demonstrating interview data, I put letters M, P or PD after the students' codes (e.g. KS-3M, KS-1P, US-2PD). The data also include the replies to the open-ended questions written by questionnaire respondents (indicated with Q after status, e.g. KS-Q) as well as the comments given by the interviewees.

5.3. Instruments

For the purposes of needs analysis, survey approaches, such as the use of questionnaires and interviews, have been the most commonly employed research methods. This is because they elicit direct information from the participants (Robinson, 1991). While quantitative data secured through questionnaires are

useful for determining the broad picture of certain perceptions of participants, or the statistical ratio of participants who tend to see an issue in a particular manner, qualitative data elicited through using semi-structured interviews are important in determining more precisely the nature of students' needs or the reasons why the participants consider issues in certain ways (Cohen *et al.,* 2007). While the questionnaire provides information about the general overall view of the participants, the semi-structured interview allows for a more in-depth discussion based on "direct verbal interaction between individuals," in order to gain insight into the underlying attitudes and "motivations of respondents, and their reasons for responding as they do" (Cohen *et al.,* 2007:351). Interview techniques are thus best utilized in conjunction with the use of a questionnaire in order to develop a deep understanding of the object of the research inquiry (Arksey & Knight, 1999:24).

Therefore I decided to use both questionnaires and semi-structured interviews for this study. This research framework follows from the research experience I accumulated when undertaking my MA study (Shin, 2000). When directly compared by using both tools, the results concerning the perceived needs in English of Korean engineering students from various sources were expected to provide rich and reliable data. In this section, I will explain the process of designing both instruments.

5.3.1. The Analysis of Academic Needs: Questionnaire

The Academic Needs Analysis Questionnaires for the four groups (Appendices II-V) were designed based on my research enquiries (cf. section 1.4). They also made use of some previous examples of needs analysis (Dong, 1998; Ferris, 1998; Johns, 1981; Shin, 2000). Some questions (8, 8-1 and 8-2) were developed according to Jordan's (1997:7-8) study skill items, which rely upon study situations.

The questionnaires began with introductory comments to explain the purposes and focuses of the questions, and to invite respondents' participation in the research. I attempted to provide clear, unambiguous instructions regarding how to fill in the

boxes in each section, and used some bold letters to draw their attention to the main inquiries in the questionnaire. The attempt was made throughout to use ordinary wording that could be clearly understood by all of the participants. The questionnaire was also designed in such a way that the participants could complete it relatively quickly and without difficulty.

There were 13 questions, which were classified into four categories: A. General demographic information (1-6), B. Needs related to Language skills/ Study skills (7-8), C. Sociocultural behaviours (9-10) and D. Specific English programmes (11-13). Although the original design included these questions, I will not be dealing with the data for category D (11-13) in this thesis, because of the need to limit the scope of this research.

Although each question was designed to suit the four groups of participants, some of the questions were worded differently for particular groups of participants. For example, in question 7, which was an inquiry about the order of importance of language skills for the participant's study situations, the following wording was used:

For the students:

7. Of the four major language skills, which are the most important **for your success in your engineering study**?

For the lecturers:

7. Of the four major language skills, which are the most important **for your PG level Korean students to succeed in their engineering studies**?

Respondents were sometimes required to tick boxes on the basis of the Likert scale according to their preferences (questions 6 & 8). In these cases, I chose to use a four-point scale, to provide the participants with opportunities to clarify their positions. This is because participants, especially those from East Asia including myself, tend to choose the mid-point if they are given an odd number of points on the scale (Cohen *et al.,* 2007:327), when they do not want to express their opinions explicitly or they do not have clear responses to some questions. An example of the

four-band Likert scale is as follows:

1: Critically important,
2: Fairly important,
3: Rarely important, and
4: Not at all important.

The respondents were also given the opportunity to state reasons or comments in response to open-ended questions (6-1, 7-1, 8-2) after filling in the closed questions which used ranking order and rating scales, because they might wish to add other comments about the issue under investigation (Cohen *et al.,* 2007). In questions 9 and 10, which dealt with the 'Impact of different academic cultures,' subjects were given purely open-ended questions. This was because responses on sociocultural issues are hard to confine within Likert scale categorizations or by ranking in order of preference.

An initial pilot study with 3 USs and 6 KSs was conducted. Though it was not possible to include lecturers within the pilot study, the assumption was made that the results for the students were applicable for the lecturers when replying to questionnaires. This seemed reasonable because the questions were structured in a similar way for engineering lecturers and students.

After the pilot study was undertaken in Korea, it became apparent that the respondents might have experienced confusion about question 8. This question was related to *how far study skills are perceived as important in a variety of study situations.* This might have been misunderstood as a question about any *necessary* study skills regardless of the use of any languages, rather than just the study skills that the respondents needed when they were using English in particular. Unlike in the UK, people in Korea do not use English all the time in a wide range of contexts. For this reason, I needed to determine how frequently the participants in Korea use English in each study situation. I therefore decided to add another category 8-1, by asking KSs and KLs to mark appropriate headings for study situations, that is, of those occasions when they find themselves having to use or to communicate in English. *Ratios of English Use* (REU) (%) were calculated by counting ticked

numbers divided by the populations of participants (see 5.4.4; Table 7.2.1). In question 8, I asked participants to tick those study skills related only to the use of English, leaving the space blank if the study skill in a particular situation was not particularly related to using English (Appendices II & III).

The questionnaires for students and lecturers at College U were written in English. For students (Appendix IV), I put Korean information in brackets beside possibly unfamiliar terms, in order to limit confusion among the Korean participants. For example, Korean engineering students may not be aware of the meaning of the term, 'plagiarism.'

The questionnaires for students and lecturers at College K were written in both Korean and English (Appendices II & III). In most cases, I used the Korean version of the questionnaires for the Korean students and lecturers, but an Indian lecturer and a Korean lecturer were provided with the English version to complete. I took extra care to minimize any possible conceptual discrepancies owing to the use of the two different languages for the questionnaire survey. As all of the questionnaire responses were going to be coded and then compared, I was strongly aware of the necessity for the two versions of the questionnaire to be equivalent.

5.3.2. The Analysis of Academic Needs: Semi-structured Interview

Since the populations of lecturers and students in the UK and Korea are significantly different, as discussed in section 5.2, the statistical data based on the questionnaire may be biased. There was also the possibility of obtaining a low percentage of response rates from the respondents through questionnaires. Moreover, one of my major research questions relates to sociocultural behaviours, which are too individual to be dealt with only by means of a set of pre-defined categories in questionnaires (Cooper & Bikowski, 2007). For these reasons, a qualitative research approach, such as the use of semi-structured interviews, was

necessary to triangulate the questionnaire data and to allow a more in-depth understanding of students' perceived needs. Therefore I devised the questions for the semi-structured interviews — the *academic needs analysis interview questions* (Appendices VI-VII) for Korean students and lecturers in both contexts — to correspond with the questions of the questionnaire.

The semi-structured interview was designed to allow for the inclusion of a set of in-depth, step-by-step and interactive investigations of the students' needs in English as perceived by students and lecturers during the conversations which arose through the interviews. A semi-structured interview uses tactics which allow for the "maximum relevant information in the minimum time" (Dudley-Evans & St. John, 1998:135). This is because it generates qualitative data within the loose structure containing key questions, and offers the flexibility to ask subsequent questions in individual conversations. Therefore, "interviewers are free to follow up ideas, probe responses and ask for clarification or further elaboration" (Arksey & Knight, 1999:7). When I actually interviewed the participants, it was possible to ask them additional questions, such as about their study background, aims of study, strategies, views of different institutional systems between the UK and Korea, and emotional factors in their human relationships. Also, I could ask them to provide examples of their experiences in their own academic situations. As the responses might vary depending on their contexts (UK and Korea), the additional discussion and comments would allow me to obtain valuable and detailed information for my research questions.

Since I already had some experience as an engineering researcher in a laboratory in Korea and as an L2 student in the UK, in my case, "the unique value of the intuitive knowledge of insiders as members of a community" (Ramani *et al.,* 1988) helped me to elicit the relevant qualitative data for research into the particular needs of Korean engineering students during the interview process. When some students seemed to have difficulties in expressing their viewpoints and needs explicitly, I could help them by reminding them of possible responses to my questions.

I was also well aware of the difficulties of asking engineers about needs which might derive from sociocultural problems. In my experience, engineering students

are normally unfamiliar with concepts such as culture and society. For this reason, questions regarding sociocultural issues in the interviews were roughly ordered so as to utilize a step-by-step interactive approach. For example, I could first ask them if they could describe any *differences* or contrasting points between Korea and the UK in academic cultures. I could then ask them to discuss the *difficulties* that might arise due to these differences. This would lead interviewees to think about and articulate their concerns with these issues in depth. The following quotations exemplify how participants identified firstly sociocultural differences and secondly their own related problems in sequence throughout the interview process. A student at College U replied as follows when discussing sociocultural differences:

> In England, students are allowed to think more regarding to the questions given to them, and speak and write clearly and logically without knowledge gaps. If not, tutors point it out to them. Whenever I address a question, I have to explain not only my answers but also my opinions, logic and reasons why I think like that (US-8P).

Based on these perceived differences, he developed his thinking to comment upon cultural difficulties as follows:

> When someone asks questions, we often reply just 'Yes' or 'No' without a clear explanation, as we cannot catch the point of the question and respond to it quickly in English... In the conference, people ask very difficult questions and it is not easy to answer and explain an answer to all of them in English. It is challenging, compared to just speaking general English (US-8P).

Each of the questions, in the questionnaires and interviews, was numerically coordinated to allow for the comparison and connection of all the responses in the following data analysis and discussion. After checking the possibility of statistical analysis and the available data analysis tools, I confirmed both documents for the questionnaires and the interviews for use in the actual situations of this research. I then stored the documents as a Word version on my computer. In this way, I could be sure that the questionnaire document could be readily transferred to other computer systems to forward to the participants by electronic mails.

5.4. Procedures

5.4.1. Access to the Participants

The data collection was started in March 2001 with the pilot study, and the main data were obtained from January 2003 to June 2004. The first problem that concerned me was how I could make contact with the four groups of participants. It was suggested in the past that engineering faculty members had not been particularly cooperative with social science research projects (Braine, 2001b). In addition, there were very few Korean engineering postgraduate students at College U.

As the majority of Korean engineering postgraduate students at College U were living in the London area and attended regular meetings of the College U Korean Society, I made contact with them directly through a meeting. I also asked the society's chair for help in distributing the questionnaires and arranging the interviews with students. I explained to all those attending the meeting about my purpose of the research and my background as an engineer, and promised them confidentiality. They then accepted my offer. In general, after they had listened to my explanation of the aims of the study, they were very co-operative. This seemed to reflect their genuine interests and concerns about the issues relating to their use of English as non-native speakers in an English-dominant academic environment in the UK.

In addition, I attempted to make direct telephone calls to students who were not available at the Korean Society meeting. Three of them were very positive regarding my research and agreed to meet me on their campus to complete questionnaires and participate in interviews. I also distributed my questionnaire by e-mail to the other Korean engineering postgraduate students at College U whom I was still unable to contact. In these cases, however, there was no response, probably because students were very busy, not interested in my research, just avoiding replying to questionnaires through e-mail, or e-mail access was not successful.

As for the lecturers at College U, although there were 23 Korean postgraduate

engineering students studying at the college, the college was unable to provide me with a list of lecturers' names who had been academically involved with Korean students. The registry office explained that this was because of the college's confidentiality rule. Therefore the approach that I used was the 'snowballing' technique, which is defined by Cohen *et al.* (2007:116) as follows:

> In snowball sampling, researchers identify a small number of individuals who have the characteristics in which they are interested. These people are then used as informants to identify, or put the researchers in touch with, others who qualify for inclusion and these, in turn, identify yet other... This method is useful for sampling a population where access is difficult... where communication networks are undeveloped or where an outside researcher has difficulty in gaining access to schools.

In my case, this snowballing technique seemed to be the most appropriate way to access lecturers at College U. Thus I decided initially to request help from the Korean students. When I asked the students to pass on my formal letter (Appendix VII) enquiring about help from their supervisors for my research, only two of them (US-8 & US-14) volunteered to arrange meetings between their supervisors (UL-1 & UL-4) and myself. The others were hesitant about doing so, possibly because they did not want to bother their supervisors with affairs not directly related to their own academic topics. Often supervisors were extremely busy, and students themselves sometimes had difficulty seeing them. When students refused to introduce their supervisors to me, I had no choice but to accept their decision.

I made contact with the two engineering lecturers who had been introduced to me by Korean students, through e-mails which explained the purpose and values of my research and its confidentiality, and politely requested their cooperation. I let them choose the proper time and place for the face-to-face interviews. Later, I received written permission for visits via e-mail. In the meetings with the supervisors of the Korean students at College U, I briefly explained my background in order to show my familiarity with the issues involved, and expressed my gratitude for their participation. I asked them to complete the questionnaires first, and then interviewed them using a tape-recorder. These meetings typically took about 30 to 40 minutes, depending on the time allowed by the UL interviewees. In contrast with

my preconception that the engineering supervisors would be very reluctant to participate in the interviews, because participation in an interview requires a certain amount of time, they were very enthusiastic and friendly. Moreover, they seemed genuinely interested in my research project and eager to discuss the issue of non-native engineering students' communication problems in the academic context.

At the end of each meeting, I asked the engineering lecturers to identify their colleagues who might help my research, so that I could obtain more data in a situation in which I was unable to contact possible participants easily. One of the lecturers (UL-1) gave me the names of two other lecturers (UL-2 & UL-3) and their e-mail addresses. Through e-mail communication, I contacted these two lecturers, made appointments and met them later in their offices. In this way, by asking interviewees to identify possible peers related to my research, thus expanding my pool of participants, I was able to contact four lecturers at College U.

However, as this snowballing technique was ineffective in contacting the majority of lecturers at College U, I was forced to use the lists of engineering lecturers identified on the homepage at College U, and sent each of them an e-mail. I distributed my questionnaire to around 600 engineering lecturers using the electronic mail system. I also included the formal letter (Appendix VII) explaining my research purposes and offer of confidentiality, and a questionnaire form to be completed. Nine lecturers returned questionnaires with their comments and encouragement. In the case of two respondents, I had to send a formal letter with the questionnaire by post. This was because they replied to the e-mail asking for my printed questionnaire to be sent by snail mail. They later returned the questionnaire replies to me by snail mail. Twenty-six lecturers replied by e-mail saying that they did not have an academic relationship with any Korean engineering student, and so were not able to help me with my research. In other cases I received only out-of-office messages from secretaries, probably because it was the holiday season.

This meant that there was an approximate response rate of about 58%, with 11 lecturers returning my questionnaire by e-mail or by post, out of a possible population of 19. [I assumed that there were about 23 lecturers who had direct academic relationships with 23 Korean postgraduate engineering students at

College U, as USs were mostly Ph.D. students who probably had one supervisor throughout their research degree courses (cf. Table V in Appendix I). Four out of a total population of 23 lecturers had already made direct contact with me for the questionnaire and interview.] When I was making contact with the college lecturers through e-mail communication, one senior lecturer (UL-5) in the Material engineering department showed great interest in my research. He had been profoundly concerned about the communication skills of non-native students. In August 2004, he invited me to his office, and we discussed my research issues together, following my usual interview procedure. In this manner I was finally able to obtain 5 sets of interview data and 15 questionnaire replies from the engineering lecturers at College U. This response rate was considered sufficient to establish a study database. [Overall response rates from USs and ULs were approximately 70 % and 65% respectively, because there were 16 and 15 responses respectively among 23 possible responses of USs and ULs in the UK].

At College K, I was also aware of the difficulty of contacting participants. The distribution of questionnaires through the electronic mail system may not work well. Research tends to show a low response rate where e-mails are used in Asian contexts (Braine, 2001a; Shin, 2000). For this reason, the snowballing approach seemed to be a reasonable way to start in this situation as well. Therefore I started my survey by using my previously established personal contacts with accessible lecturers and students. Luckily, my experience as a researcher at College K meant that I still had a strong connection with one current member (KL-1) of the faculty of Mechanical engineering. I therefore made contact with this individual in order to ask for help with my research, which he was pleased to give. After I visited him in his office, he introduced me to some of his colleagues and students. The lecturers then introduced their students to me in their laboratories.

Soon after meeting an individual student or lecturer, I explained to him my research purposes and my previous background as an engineering researcher. After this was explained, they seemed to accept me as an insider of their academic community and to answer my questions sincerely. They all seemed well aware of the centrality of a number of issues related to English in the academic practices of engineering. As a

result, the interviewees and I were able to share deep and meaningful conversations. At the end of the interviews, I asked them to help me by introducing me to some of their colleagues or friends, and they were able to do this. In this way, I was able to obtain 21 sets of questionnaire and interview data from the postgraduate students, and another 14 sets of data from the lecturers at College K.

To support the quantitative analysis of the student data, a few students volunteered to distribute my questionnaires to their colleagues in their study rooms or laboratories. An additional 135 students completed the questionnaires and returned them to me by hand or by post. However, as it happened, none of the students agreed to distribute the questionnaires to their supervisors or other academic staff, probably for similar reasons to the USs in the UK. In this case, I just accepted their refusal. To other lecturers, I then distributed the questionnaire by post, together with a formal letter and a stamped addressed envelope, asking for responses concerning my research. In this way, I obtained 20 completed questionnaires from KLs by snail mail.

Apart from collecting data, I was able to continue to communicate with lecturers from two institutions (UL-5 & KL-1) through e-mails. This procedure helped me to get additional comments and clarifications from lecturers, as I analyzed data and new inquires arose.

5.4.2. Process of Research

In the actual data collecting process, I conducted the questionnaires first, following the interviews. This was because, if the interview came first, the interviewees might be influenced to some extent by their interaction with the interviewer. This might have affected the questionnaire replies concerning their perceived needs.

While the questionnaires were targeted to secure general responses from the wider pool of participants on the research issues, the semi-structured interviews focused upon participants' in-depth opinions and explanations. During interviews, in order for me to understand the current situations of their communicative skills and sociocultural behaviours, I encouraged students to describe these in association with

their previous study backgrounds, the current aims of their study and their plans for the future. I also asked them to think about their supervisors' or instructors' degree of satisfaction with them, as well as the extent to which they themselves were satisfied and what their strategies were for dealing with academic practices in engineering.

During the interviews, I had the opportunity to disclose my current research aims and my previous academic background as an engineer; doing so seemed to be one way to foster trust and credibility with the interviewees. I contributed my own reflections as an insider, in order to remind participants of their own feelings and experience, while allowing them to draw their distinctive thoughts. Although most participants were able to explain their perspectives very well, some seemed to experience difficulties when attempting to do so. In these cases, I encouraged them to reflect freely and honestly upon uncomfortable situations from their past or current experiences, and to be open about in their opinions or attitudes. These attempts seemed to be very effective in provoking the interviewees to express their underlying views on their needs. But I was cautious not to influence the contents of their responses, by avoiding any subjective evaluation of their replies.

Through the research process, my previous experience as an educational researcher was helpful in understanding the interviewees' perspectives in their specific contexts. As Cohen *et al.* (2000:20) suggest:

> Individuals' behaviour can only be understood by the researcher sharing their frame of reference: understanding of individuals' interpretations of the world around them has to come from the inside, not the outside. Social science is thus seen as a subjective rather than an objective undertaking, as a means of dealing with the direct experience of people in specific contexts.

Therefore my insider's knowledge of engineering contexts permitted me to delve into the present needs in English of Korean engineering students in two institutions, and seemed to have a productive effect on the whole research project.

5.4.3. Tactics to deal with Two Contexts

In collecting data concurrently in highly divergent contexts, researchers may need to approach the participants differently and flexibly, depending on their culture and context. This is particularly true when access to these participants appears to be difficult. Braine (2001b) attempted to apply the same approaches and research tools for analyzing writing assignments to largely different contexts, namely at a university in the United States and at a university in Hong Kong. He described his research at the University of Texas at Austin in the US as a success, but his research at the Chinese University of Hong Kong as a failure because of the lower degree of cooperation of lecturers. It seems to me that he should have contacted the two groups of lecturers flexibly, with different approaches depending on the culture and contexts of two countries.

In my case, during the course of this research, although collecting data from the engineering lecturers in both universities appeared to be problematic, the difficulty was overcome by contacting the potential participants differently. For instance, while the electronic mail system was a powerful tool in the UK, it might not be particularly effective in Korea. I experienced the limitations of internet-based research during my MA study (Shin, 2000:39) and I did not attempt to use e-mails to participants in Korea. Although Koreans value their 'face' and cooperate very well in personal contact, they may not be very helpful through the electronic mail system, because they do not respond well to e-mails from 'strangers without face.' I thus attempted direct personal contact or posting. Lecturers in the UK, on the other hand, did not seem to have any difficulty with e-mails and may even have preferred it, because e-mail communication is easier for them and prompter. Moreover, it seems to me that if the issues that I was raising were interesting to them, lecturers in the UK were pleased to volunteer to participate actively in the research through e-mail systems.

5.4.4. Data Treatment

Because of the significant population differences between the groups of students and lecturers in Korea and the UK (Table 5.2), there was a major imbalance in sample sizes in the questionnaire survey. In cases like these, a direct statistical comparison may be less helpful, and the reliability of quantitative analysis based on small numbers of samples was doubtful. For this reason, the questionnaire data needed to be treated with caution, and mostly remained as background data for the research questions regarding skills and sociocultural behaviours. The interview data were therefore considered as the main source for the findings in this study (Chapters 6-8).

Nonetheless, all the information collected from the questionnaires was coded for statistical analysis and entered into a computer database. The Statistical Package for the Social Science (SPSS) for Windows (Version 12.0) was used for all data entry. The procedures employed included descriptive statistics of frequency occurrence (totals, percentages, means, and standard deviations) to compare for the items based on ranks or scales as assigned in ordered categories on the questionnaire. In addition, in an attempt to test the significance of variation between the groups, I had to combine the numbers of the categories and undertook a Chi-square test, because some frequency categories showed zero in response to question 6 (Table 6.1) (Diamond & Jefferies, 2001).

For question 8, Ratios of English Use (REU) percentages were calculated by counting the ticked numbers divided by participants' population (n/N). REU values of each study situation for KSs and KLs are shown in Table 7.2.1. I also attempted to measure Pearson's correlational coefficient (ρ) to identify the relationship between REUs (Table 7.2.1) for KSs and KLs and the mean values of study skills depending on study situations (Tables 7.2.2.1 - 7.2.2.10).

Despite the serious gaps in numbers among groups, the questionnaire data proved to support the interview data well (see Chapters 6 & 7). These data were therefore accepted as meaningful for my research purposes, and included in my discussion

and analysis. The triangulation approach, combining multiple research instruments and using a wide range of different sources, seemed to overcome the problems of validity, limitations and bias (Arksey & Knight, 1999), which any single research method may have (Leki & Carson, 1997).

During the course of the interviews, I used English to communicate with ULs and one KL (KL-1). With other Korean participants (US, KS, KL), I discussed in Korean. The comments of both the students and the lecturers in interviews were tape-recorded and then transcribed or translated into English for citation and further analysis. [Examples of verbatim interview scripts are shown in Appendix VIII.] Bearing in mind the large quantity of data, I attempted to set out the major themes that emerged repetitively throughout the data, and coded them in such a way that both common grounds and differences between the participants at the two sites of the study became salient. In some cases, as the academic tasks and structures of M.Sc. and Ph.D. courses were shown to be fairly different in each engineering institution (sections 5.1.1 & 5.1.2), I differentiated the replies in the interviews according to the course levels in analyzing and describing data (Chapter 7). Since data analysis is not a simple description of the data collected but rather a process by which the researcher can interpret the data (Powney & Watt, 1987 in Li, 1998: 685), I also attempted to offer my own interpretation in the final analysis and discussion.

5.4.5. Ethics

Throughout my research process, I was well aware of ethical concerns. I thus attempted to collect data only with the informed consent of and permission from participants, and ensured their confidentiality (cf. section 5.4.1). I also kept the confidentiality rules of both colleges. For example, as the officer of College K explained that the school does not officially allow the school's name to be attached to the research held by external researchers, I accepted their rule and preserved the anonymity of the schools in this thesis. In addition, when I contributed my insider view in interviews, I recognized the possible dangers of imposing my own viewpoints when interviewing respondents. I therefore attempted to minimize my interruptions, though in some cases I needed to help them to recall their experiences

and feelings, and avoided expressing my subjective judgments on their opinions (cf. section 5.4.2).

All participants in this research were cooperative and provided informative data for my research purposes. This is partly because my background and understanding of their academic situations allowed the building of mutual trust and rapport with the interviewees. Moreover, all were studying in academic contexts and seemed to share a sense of the necessity of academic cooperation between social science and engineering. An alternative explanation of the quality and enthusiasm of participation in this survey is that participants from engineering departments (especially in the UK) would naturally tend to communicate and explain ideas to other people, because communication is an essential part of their disciplinary conventions (cf. section 3.7.1). Therefore they might be eager to discuss problems over English for themselves or their students.

Though at first it seemed difficult for me to access lecturers and postgraduate students for research, once they were involved with the research they were willing to share and discuss ideas and issues (Arksey & Knight, 1999) related to needs in English in the discipline. During the relatively short interview time, ranging in length from 20 minutes to 1 hour and 30 minutes, those taking part in the interviews seemed to be enthusiastic and sincere in responding to the research questions and explaining their difficulties in studying engineering or tutoring students.

For example, it emerged that the lecturers, in both Korea and the UK, had some strong perceptions of students' needs in English. In particular, the lecturers at College U were seriously seeking for ways to solve the problems which they had in communicating with Korean students. On occasion, they even asked me about the reasons for the unexpected attitudes of their Korean students, or attempted to provide their own suggestions for establishing better EAP programmes in Korea. Several of them actually told me that they enjoyed being given the opportunity to discuss Korean students' problems with English in a free and open way. This seems to me to mirror their deep concerns for Korean students regarding the use of the English language in their own field of study.

This research also offered students the chance to reflect openly and orally on the problems of their study habits, skills and strategies, and to think objectively about differences in cultural expectations between themselves and lecturers in the academic community. The reflective discussion was likely to be emotionally and psychologically helpful for their future academic performance and interaction with other engineers. Although some Korean students had been uncomfortable about their lack of skills in English, they might not otherwise have been able to discuss and objectify the problems with others. They might even have had no opportunities to think about sociocultural matters, because people are "often unaware of the assumptions, ideas and beliefs that constrain their acts" in social practices (Flowerdew & Miller, 1995:370). In this regard, this research seemed to provide a valuable space for students and lecturers to contemplate their own academic culture or the expectations of the engineering community.

In this chapter, I have described the two settings of this research and the methodological issues concerning participants, instruments and procedures, data treatment and analysis and research ethics. The following Chapters 6 to 8 will include the collected data and discussion regarding the importance of English, skills-based needs, sociocultural behaviours and the reasons for these which arise for Korean postgraduate engineering students in Korean and UK academic contexts.

Chapter 6.
The Importance of English in Engineering

The aim of this chapter is to address the data relevant to my first research question (see section 1.4) enquiring how far English is important for Korean postgraduate engineering students and why it is important in the academic practices of engineering in the global community. These data are based on the perceptions of students themselves and lecturers in the UK and Korea, gathered through the administration of questionnaires and semi-structured interviews. I will first draw on the data organized according to research instruments, contexts and emerging issues. Then I will examine how the perceptions among groups of participants differ or agree, comparing their perceptions in both contexts. Finally, I will discuss some issues in terms of the importance of English for Korean students in the era of globalization.

6.1. The Degree of Importance of English: Questionnaire Results

In question 6 of the questionnaires (Appendices II-V), four groups of participants (KS, KL, US and UL) responded to the question about the extent to which the English language is important in their own academic settings. The responses of each group are summarized as Table 6.1.

All participants, except for a few KSs, considered English to be *critically* or *fairly* important for Korean students who study engineering. This signals strong recognition of the role of English for students' study among participants, regardless of contexts. In order to identify whether significant differences exist between groups according to the Chi-square test, I combined the numbers for the three categories of *fairly* important, *rarely* important and *not at all* important, because no

KLs, USs, and ULs chose the categories of *rarely* and *not at all* important (Table 6.1) (cf. section 5.4.4). The result showed that differences in perceptions on the importance of English, at the 5% level, were not strongly significant among the groups (p=0.074).

Though the responses were not statistically significant, both lecturer groups appeared to be more concerned with the importance of English than were the Korean students. This is probably because the lecturers had experienced working in engineering for a longer time than the students, and as a result were more aware of the importance of English for their students.

Table 6.1. **The Degree of Importance of English**

Question 6	Critically important		Fairly important		Rarely important		Not at all important	
	n	%	n	%	n	%	n	%
KS (N=156)	93	59.6	53	34.0	10	6.41	0	0.00
KL (N=34)	23	67.6	11	32.4	0	0.00	0	0.00
US (N=16)	7	43.8	9	56.3	0	0.00	0	0.00
UL (N=15)	13	86.7	2	13.3	0	0.00	0	0.00
Total (N=221)	136	61.5	75	33.9	10	4.52	0	0.00

N.B. Percentages may not add up to 100 because of rounding.

Therefore all groups agreed on the importance of English according to the questionnaire survey. However, as the numbers in the sample were very unbalanced and problematic for the reliability of statistical analysis, semi-structured interviews were performed with selected participants, and more weight should be given to these.

6.2. The Importance of English: Interview Results

During the interviews, participants replied regarding not only *how far* they perceive English to be important for students with whom they are concerned or for themselves, but also *why* they perceived this to be so in their engineering study settings. The data are described in response to emerging themes across the groups

of participants and contexts, as follows.

6.2.1. The Main Medium of International Communication in Engineering

At College K

First of all, students emphasized the role of English as a means of *international communication* in engineering. Engineers research and collaborate with colleagues of all nationalities in the global milieu. This requires a common language for written and spoken communications, and English has become the crucial medium through which their ideas are communicated in the global engineering academic community.

> Engineering has been studied in all countries in the world, although each country has different cultures and traditions. Engineers in the world have researched and studied together, and therefore engineering fields have developed concurrently with other nations. Engineering is international. In doing engineering, the common language is English. To work together with many people and read the literature to obtain a lot of information, English is necessary (KS-7P).

Korean lecturers also acknowledged that English is important to enable students to share ideas and information through conferences, journals and academic collaboration in the international academic community.

> Most engineering academic journals are written in English, so students must read these well and also present their academic work in international conferences and journals. Therefore, they need to write English well. Moreover, students, more and more, need to cooperate with foreign researchers when they research for a company in the global society (KL-3).

English is thus not seen as important just for English majors.

> Even if students are not English majors, when they communicate with people in the world the only tool is English and, in that sense, the use of English in general becomes important nowadays (KL-2).

Furthermore, the academic settings of engineering in Korea are becoming multinational due to the recent influx of foreign lecturers and students, as described

in Chapters 2 and 5. English is used when Korean students attend lectures and communicate with students or lecturers of various nationalities at College K. Under the circumstances, the only medium of communication and information exchange is English.

> Many foreign students, mostly from Asian countries like China, India, Mongolia and Pakistan are studying here with us. There are few students from countries where English is the main language. When we study together with foreign students in the classroom, we use English. English is the so-called international language (KS-2P).

> Not only do students have the chance to use English when they go abroad directly to study or to take part in international conferences, but also when people of other nationalities come to our country and we need to speak to them in English. This is becoming more frequent (KL-2).

In spoken communication, students have growing opportunities to speak with foreign engineers from non-Anglophone countries in the Korean context.

> When we communicate with non-native English speaking foreigners as well as native speakers, English is the only tool. There is more need to understand the English of people from other non-English speaking countries, rather than English speaking countries like America and England (KL-2).

KLs reported that the role of English for international communication has expanded from the previous era, because nowadays Korean engineering students have to communicate in English with foreign engineers, not only within the educational sectors, but also in their daily lives outside the classroom for social activities. Engineering students are thus expected to be involved with diverse kinds of international communication in English.

> Nowadays, in engineering, you have to be familiar with the outside world... Not only technical presentations, but also casual conversation, making friends and getting acquainted, all have to be in English as a communication tool (KL-1).

> English is important for students in studying engineering within school and in other places. First of all, English is needed for reading engineering literature written in English and writing theses, just as I studied before. Secondly, English is much more important in students' everyday lives outside classroom than during my school times (KL-2).

Evidently, Korean engineering students are essentially involved with diverse international communications in English for a variety of purposes in educational and social settings in Korea. The role of English has shifted from being merely a tool for searching for information written in English towards being the main medium of diverse international communications in Korea.

At College U

For USs, English is a major tool for all kinds of communications in academic situations including academic knowledge exchange and every social interaction. English was thus seen as a vital tool for academic *survival* in UK institutions.

> With a limited knowledge of English, we can survive in our daily lives, but in the academic areas, it is important to know scientific technical terms and writing styles for engineering (US-13P).

> English is important here to survive, which means we should write and present in English (US-11P).

ULs especially emphasized Korean students' oral/aural communication in English as a pivotal factor for accomplishing their academic tasks successfully and functioning effectively as members of the engineering academic community. It seems to be the case that, in Anglophone countries, people attach great significance to oral communication in the community, believing that "breakdown of oral communication is caused by unshared knowledge and assumptions" (Roberts, Jupp & Davies, 1992 in J. Jones, 1999:249). [I will discuss this issue further in Chapters 7 & 8.]

> No matter what subject it is, if you are not communicating, you have an immense problem. Some say English is not so critical, because if they know science terminology, they can communicate easily. But I don't agree with that. I think there is no substitute for simply being able to talk to somebody (UL-2).

> The English of foreign students is the most critical thing. If they don't understand what is said to them, then it's very difficult to be successful. I can't express, I can't say strongly enough how important that is... If they don't understand what is said to them, then it's very

difficult to be successful (UL-3).

English is thus perceived as a critical medium of international communication for engineering students both in Korea and the UK.

6.2.2. A Crucial Medium through which to Obtain International Recognition for being a Good Engineer

At College K

KLs believed that English is a very important factor in having students to gain credits or reputations as good researchers among engineering academics in the global academic community. No matter how much knowledge students have and no matter how talented they are in engineering, other engineers worldwide may not appreciate this unless they can adequately explain themselves in English. Therefore mathematic symbols and technical skills are not enough for engineering students as communication mediums but need to be embedded in a high level of academic English.

> Although the idea is excellent, if they cannot express and display it, it is useless. English is important to demonstrate engineering ideas to others. Math is not enough for students who do engineering subjects. Mathematical symbols should be explained with proper use of English. Symbols do not mean anything without explanation. Some say that about 70% of our engineering activities are made up of communication. So in that sense, English as a medium of communication is very important (KL-8).

> We are teaching high level, highly qualified, elite postgraduate students. As a rule, they are supposed to present their results at open international conferences specializing in Mechanical engineering or Fluid Mechanics. Of course, they have to write their proceedings and present in English... In order to become a researcher of international reputation, you have to reach that stage. If you don't go through it and if you stay on the domestic market alone, you can't become an international researcher. It is not just important, it is absolutely essential. It is not technical skills alone, but students' ability in English that makes the difference between a good and a lousy researcher (KL-1).

At College U

For USs as well, the need for English in order for students to be recognized by other engineering academics was important, as this recognition directly influenced their academic success. The knowledge written in, or expressed through, inarticulate and unnatural English may not show its true values and will be wasted.

> As a worker in a scientific area, it is important how much I express my ideas naturally or not. Depending on how well I describe what I think, I can or can't be accepted in prestigious academic journals. More than grammar, scientific expression depends on how simple, correct and non-repetitive the description is. Unless it is a mathematical derivation, English is used anyway. Many articles written by Korean engineers tend to be of low quality and remain 'not referred to' by other writers, because their ideas have been expressed in poor English (US-16PD).

> If I can't explain my arguments well or enter the debate at the right moment in the discussion, they wouldn't know and cannot judge clearly whether I have a good knowledge and ideas. We Koreans have excellent technology in mobile communication fields. But, even if we have the techniques, if we can't explain them in English, the information is not transferred to other foreign engineers (US-7P).

ULs reiterated that students' great achievement and research were *useless* and *a failure*, unless these were properly expressed in English.

> It doesn't matter how wonderful it is, the research you've done, what a great performance you've done. If you can't explain it by speaking and writing in English, then it is a failure... Failure to communicate can be misinterpreted as lack of knowledge (UL-5).

Therefore adequate English is seen as an absolute necessity for engineering students seeking to gain international recognition in both contexts.

6.2.3. A Crucial Factor for Academic Work and Study Efficiency

At College K

Numerous practices in which students are involved, such as reading literature, writing papers, oral presentation, and international collaboration with foreign engineers, require English in Korea.

> English is important to a certain extent, in terms of thesis writing and knowledge exchange with foreigners at conferences. When we do a survey, we also need English... We do not write papers in Korean. About 90% of the papers must be written in English, as we need to publish them in foreign international journals (KS-17P).

> Students need to read and comprehend papers and books which are usually written in English. When they search for internet information and use computers and talk to foreigners in or out of the country, English is necessary (KL-14).

As a result, students' English competence greatly affects the efficiency of their study in engineering. Students were concerned with English for study efficiency, presumably because engineers always "perceive the constraints of time" (Donald, 2002:68) in performing tasks.

> We can obtain information quickly without wasting time if we have fluent English proficiency, so English is very important (KS-18P).

Korean students perceived that they had to spend more time comprehending texts compared to native English speakers, and that they were *disadvantaged* as non-native speakers. Korean students seemed to struggle with time to accomplish their subject tasks, due to their lack of English competence. They tended to think that English is a separate subject and that learning English requires extra time.

> We are disadvantaged because we have to waste time studying English as a subject and it takes us more time to read papers than native speakers (KS-Q).

> As non-native speakers, we need to study engineering and English simultaneously. We have to know specific terminology both in Korean and English (KS-Q).

> Most papers are written in English. So it takes more time to read and understand the contents (KS-Q).

> In Western countries, a huge amount of information is acquired without special efforts (KL-Q).

However, KSs perceived that they had to spend most of their time managing engineering subjects, while they *lacked time* to learn and practise English during

their academic years. Seeing English as 'separate' and not integrated with their engineering studies, students tended to ignore the long-term goals of learning English and delayed learning English (see section 7.1.2).

> I know English is very important. But, I do not have enough time to study English. The demands of engineering research are huge (KS-21M).

KLs considered that the competence of English was required more for *postgraduate* students than undergraduates, because of the rigorous demands placed upon them to carry out various sophisticated oracy and literacy tasks and to produce knowledge.

> As for engineering students, especially postgraduate students, nearly 100 % of textbooks and all the literature are written in English and all dissertations or theses for degrees are almost always, more than 90 %, written in English... English is an absolute factor, almost 100%, for their academic success. If they can't use English well, even though they can do well in engineering subjects, they would suffer a lot, as their works or achievements cannot be shown or highlighted. These situations have recently become more significant (KL-1).

However, among Koreans, KLs and students tended to communicate in Korean, because students were more comfortable with using Korean to understand technically difficult information and the subtle meanings of engineering contents. Therefore, there is significant "code-switching" (McKay, 2005) between English and the mother tongue in the local context.

> When foreigners join in lectures and seminars, we speak English to discuss with them. But among Koreans, we speak Korean, because technical engineering knowledge is somewhat difficult, and students are also very embarrassed with the English-medium lectures (KL-2).

At College U

The demands of English for academic work and efficiency in studying seemed to be much greater for Korean students in the UK than in Korea, because here English is the *only medium* for voicing and transferring their ideas to colleagues in the academic community.

> I have great difficulties that I didn't expect before, while I was in Korea. I need to overcome these difficulties with my effort as well as time (US-12P).

> When I consider students who came here just for PG or UG courses, English is an enormously big obstacle. So, when they write a thesis and when they perform presentations, their progress becomes slower... When I read something and understand it quickly, I can go on to the next process quickly. But if I don't understand it quickly and precisely, I will either misinterpret or read it again. So for me, English is critical (US-5P).

USs also felt they were weaker and less efficient in studying engineering than native English speakers.

> If I could speak English like natives, I would be able to finish my course in much shorter time (US-12P).

The majority of USs commented upon the importance of particular conventions in the use of English required for engineering such as writing styles, the ways of oral presentation, specific terminology and explicit explanations of knowledge, different from those required for daily communications.

> With limited knowledge of English, we can survive in daily lives, but in the academic areas, it is important to know scientific technical terms and writing styles for engineering (US-13P).

ULs remarked that non-native speakers, such as Korean students, require a good command of English, not only for understanding the literature and performing various academic tasks, but also for communicating with supervisors and colleagues.

> It (English) is certainly important for foreign students to enter the course... I think if the standard of students' English is below a certain level, it becomes very difficult to communicate and convey right instructions for students and to understand what they are trying to communicate themselves... They need to have a great command of English, not only for understanding lecture materials and supervisors but, equally important, to be able to communicate... speaking clearly such as communication with supervisors and fellow students. Verbal communication skills are essential to ensure safety in the lab and a coherent research project... And also it's very important to be able to write a report and thesis on the project (UL-4).

ULs also elaborated that the use of English within engineering was more precise at postgraduate levels, given that their major concern was how far they can make Ph.D. students understand knowledge during supervisions or lectures.

> Engineering requires precision in language as in other aspects. In teaching students, it (English) is of significant importance. For Ph.D. students, it's absolutely essential. One should be at a certain level of English ability to be a Ph.D. student. To tell the truth, I don't take students with language problems for the Ph.D. For UG, I have no choice. For the Ph.D., I won't, because I can't get through... In supervising a project, it is very important, because they must understand what they are doing and you have to give them a specific task. So it's very important in supervision, and mainly for them to understand what I want. For me to understand what they want is relatively easy, because I can see the results, what they've done, and equations. Therefore a major problem in supervising is they don't understand what I want (UL-1).

Thus English is seen as a crucial factor in study efficiency in both contexts. However, Korean students perceived they are disadvantaged due to their lack of English competence. The more advanced the academic level of the students, the more they require a good command of English.

6.2.4. The Relationship between English and Subject Knowledge

At College K

Both English and engineering knowledge were considered as equally important for students' academic practices.

> I consider engineering subject knowledge and English proficiency 50:50 (KS-4P).

> Both engineering subject knowledge and English proficiency are equally important. A good engineer cannot ignore either of these (KL-1).

This statement strongly indicates that English is a crucial factor for engineers, even in Korea. KSs perceived that they had become used to academic practices in English, as they had accumulated engineering knowledge over a number of years. When they had nearly completed their Ph.D. courses, they gained some confidence

in English, at least for the purposes of presenting their own work.

> When I was at the undergraduate level or at the early stage of a master's degree, I had great difficulties in presenting my research in English, but now I am used to it. I can manage to write my thesis and explain my findings in English without much trouble, as far as my research is concerned... I am almost in the last period of the Ph.D. This is my fifth year of a doctoral degree... I think I have overcome English problems through experiencing the situations over and over again... I have read texts written in English for more than 10 years as an engineering student and have written papers in English for many years (KS-17P).

As students progressed in knowledge of the subjects throughout their academic lives, they seemed to acquire the necessary English and literacy for the discipline as an integral part of learning. This indicates that there are *particular kinds* of English which they require for their academic practices.

At College U

The close relationship between English competence and engineering knowledge was also clearly manifested by USs in the UK. US-16PD mentioned that good knowledge of engineering is associated with long periods of training in literacy.

> If the idea is really good, people will follow the author, although his/her English may not be good. But to attain that level, he/she must study, read a lot, write and publish many times. So, good language skills in English and accumulation of engineering knowledge go together in a sense (US-16PD).

This remark seems to indicate that knowledge and contents of engineering are closely related to the specific linguistic skills and conventions of the discourse community. Therefore, if students are guided into discipline-specific literacy of engineering, this will accelerate their academic development in engineering. [I will return to this issue in Chapter 7.]

English can be more crucial than engineering knowledge for engineering students, because it is used for explaining and communicating the abstract concepts and

nuances of engineering knowledge in written or spoken formats to other engineers in all contexts.

> Some would think our difficulty is related to the deficiency of understanding the subject rather than an English problem, but I would say it is usually English. Actually, the subject concepts are very simple and can be expressed by equations and formulas. When I relate the results of an experiment or computer simulation to formulas, the concept should be explained in English. In that sense, English is critical (US-5P).

Without solid subject knowledge, however, proficiency in English may not work well.

> Some people do not study much, but they can speak or use English well. In that case, their papers have limitations. Their long-term reputations cannot be established (US-5P).

Both the content knowledge and English competence are thus crucial for engineering students' academic practices in the community.

6.2.5. English as a Powerful Language

At College K

English was considered as a powerful language by KSs. Some explained their feelings of loss and discomfort when they were not proficient in English, in comparison to other more competent English users. There seems to be a *power relationship* between competent English users and non-competent users, internationally or intra-nationally.

> When someone presents in conferences, I do not catch the points. In that case, I sense my language limitation and feel that I have to study English much harder… When I write papers or when I am in conferences, my supervisor can use English well, but I can't. Even if I want to express my own ideas, if my ideas are slightly different from my supervisor's, I have to follow his ideas. I am in a passive state, because of my lack of English competence (KS-6P).

Students and lecturers in Korea acknowledged that the power of a language follows the academic, technological, economic and political power of the countries where the language is used.

> Our country is still not an advanced country and a language for international communication is determined by the strength of countries. So, although subject knowledge is basic and essential, to communicate and to make my ideas known internationally, we have no choice but to use English (KS-4P).

> In my postgraduate class, I usually use English because there are several foreign students. To tell the truth, they need to learn Korean and take my courses in the Korean university, as in other countries like Japan or France. However, we use English here (KL-9).

At College U

USs were aware of the need for certain levels of English competence in order to defend themselves from unfair situations in the UK university environment.

> Also we should respond when we are unfairly treated by other nations at school, although we don't need to be excellent in English for daily survival (US-11P).

Thus English users and English-speaking countries were considered to possess power in the academic community, and English was seen as the only medium in which they could demonstrate their rights in the UK academic setting.

6.2.6. English Competence and Periods of Stay in the UK or Foreign Countries

Regardless of how long USs had lived in foreign countries and how competently they used English, English was considered as a critical factor for them.

> I have been here only for 6 months, so I have great difficulty in listening and speaking English. English is crucially important (US-12P).

> I have studied in Iran and Malaysia since the 3rd grade of elementary school, and I am studying in London now. Therefore I don't have any problems in English; nevertheless, I still think English is critical for understanding clearly and communicating well with others like supervisors (US-9M).

> I have been here for about 15 years since finishing middle school. Still, English is important for me (US-5P).

These comments imply that English remains important throughout students' entire academic lives. Nonetheless, UL-5 estimated that Korean students tended to overcome major obstacles with English after about *two years* of hard effort on the part of both students themselves and tutors, which must be very time and energy-consuming for both parties. He also perceived that Korean students required more support from supervisors than native students, for example, in amending grammatical mistakes.

> Korean students' English often improves significantly towards the end of the second year, so that by the time of submission of the thesis, the English is of an acceptable level, albeit with more help from the supervisor than would be the case for native English speaking students. For written work the first read through involves correcting the English rather than reading the science, but most supervisors accept that as part of their role... I have observed that learning English is not a linear process and the improvement can be as a 'step-function.' For example, a student from Taiwan made sudden progress after 18 months and then went on to write a very nice thesis (UL-5).

6.2.7. Concerns with Inadequate English Communicative Competence in English

At College K

KLs were concerned about Korean students' poor English competency, which lagged far behind the international standards in the community. Communication difficulties with English were severe, not only for students but also for lecturers themselves. Sometimes, there seemed to be no way for KLs to solve students' problems in English, and students were exposed to potentially embarrassing situations due to lack of English competence, as follows.

> Even after the Ph.D., students cannot manage writing skills in English... If someone, especially from India or China, asks questions after the presentation and if we don't understand the questions, the students and I are very embarrassed. But we cannot help it

(KL-13).

Acknowledging students' difficulties, KL-9 provided opportunities for students to practise oral presentation skills in English in the classroom.

> I sometimes have difficulty in explaining precisely in English in the lectures, and students also tend to have difficulties understanding lectures. So Korean students should have a certain level of English capability in order to listen to lectures... Once a week, my students take turns to report or present their research results in English in my lab, and thus their presentation skills are improving. When they go somewhere to present, they will not be frustrated, I think. However, their pronunciation and precise expressions are still problematic (KL-9).

Lecturers seem to imply the urgency of appropriate EAP courses in Korea to improve Korean students' communication skills in English so that they can competently participate in the academic practices of engineering.

At College U

USs also talked about the challenges of the English required for studying engineering in a country where English dominates. They were concerned about academically deficient use of English as well as English use in daily lives. In particular, academically inappropriate and clumsy use of English is seen as a crucial obstacle for USs. Students were expected to adopt stricter "legitimate peripheral participation" (Lave & Wenger, 1991) in the UK academic setting.

> If I had had a good level of English, it would have been easier to manage my daily life, research and other things. I feel stupid and find it hard because of English deficiencies. English is a significant obstacle for me, especially in English listening when I discuss results with my supervisor. I only understand 70-80% of the supervisor's comments and I approximate the other 20-30% by myself. Sometimes I misunderstand some words and the supervisor corrects them again. I wish I could understand better. Then my progress would be faster (US-12P).

> I have been in this country for many years. But, when I consider colleagues who came here just for PG or UG courses, English is an enormously big obstacle. So when they write a thesis and when they perform presentations, their progress becomes slower. The presentation

> may be fine, but when they are asked and need to answer a question, many cannot cope with it (US-5P).

They appeared to have severe difficulties in academic practices such as listening to supervisors' comments in supervision, writing theses and replying to questions in the oral presentations. A sufficient command of English to perform these academic practices was thus understood to be a vital requirement for Korean students seeking to fulfil academic tasks successfully and effectively in both contexts.

6.2.8. English as a Less Important Factor

At College K

On the other hand, a few KSs reported that English was *not so critical* for their study, because, apart from English, other tools such as specific terminology, physical diagrams and mathematical logic were more crucial for the study of engineering.

> In doing engineering research, only a minimum amount of English knowledge is needed just to read literature and to write papers. All engineering literatures are composed of subject specific terminology and if we understand the terminology we are able to work in the fields with little English knowledge and skills... Only simple patterns of English are used. Mathematical logic is more important than English in engineering (KS-15M).

KL-13 also believed that engineering contents and techniques were more valuable and important than English, and English is not problematic for engineering, unlike for humanities or social science. Nonetheless, he did not neglect the importance of fast reading and presentation skills in English for engineering.

> In the mechanical engineering field, mathematical calculation and observation of phenomena following cross-sectional treatments are critical tools for research, and English is not so important as in other areas like business, MBA or humanities... Students have used English textbooks from UG level, and they don't seem to have difficulties in reading. Students have already studied the special engineering vocabularies, so they don't have difficulties with those. Just reading fast, catching the main points and presentation skills are very important (KL-13).

KS-17p considered that, once students are used to a minimal level of English competence for explaining their own research, English is less crucial in the local context. However, if students go on to professional levels, they will be involved with wider social practices and face more challenging situations that require more proficient English.

> Now I am used to writing my thesis and explaining my findings in English without much trouble, as far as my research is concerned. As communication about my research with foreigners is required only for a short time, I can just demonstrate my research. Most academic communications take place in that way, and we don't need to maintain deep personal relationships... I am almost in the last period of my Ph.D. This is my fifth year of the doctoral degree. I think I don't have serious problems in English, as there is not so much necessary private relationship with foreign researchers... However, once I want to get a job after the Ph.D., then I will need more advanced English proficiency (KS-17P).

At College U

A few USs also made similar comments that English was less critical in studying engineering, compared to in other subject areas such as humanities. Although they judged that mathematical symbols are more important mediums of communication, they posited the importance of English for social interaction.

> In the engineering area, English is not as significant a factor as in the humanistic or social sciences. Physics and Maths are more important. But in reading papers and listening to lectures, English is necessary, because I'm not used to specific terminologies and English texts (US-14M).

> Compared with other areas, English is not so problematic in my field. But, when a more social relationship is needed, English seems to be very critical (US-4P).

UL-1 considered that conceptual understanding of the subject knowledge was more important for communication than English competence. Language and skills were seen as a secondary issue for students seeking to manage the engineering subject.

> More misunderstanding is not language related, but conceptual misunderstanding. It happens to home students, too. I can say many examples of conceptual misunderstandings, but very few of language misunderstanding...I don't think language and skills are a major issue (UL-1).

These statements seem to imply that some engineering academics are often unaware of the role of language and discipline-specific literacy, and simply believe that engineering literacy and conventions are transparent (Hyland, 2006).

In addition, the multinational and multicultural UK academic context and their acquaintance with engineering knowledge led Korean students to perceive that they do not require the English proficiency level of native English speakers.

> Frankly speaking, I don't think English is critical in engineering areas. In this department, there are 4 British MS students among the 25 students, and there is no British student at the doctoral level. I have heard that engineering areas are not popular among British students. Also a few lecturers are British, and the others are foreigners too (US-6P).

Although USs do not need to take native speakers as models for their English learning in the multinational academic context, English must be the main vehicle of communication for Korean engineering students. No doubt, they need English competence for academic practices and social interactions with other engineers in the academic community.

6.3. Summary

Throughout the questionnaires and interviews, all groups of participants, with a few exceptions, agreed on the pivotal roles of English for Korean postgraduate engineering students in their academic sectors, whether in Korea or the UK. English was recognized as a powerful medium of international communication, needed for acceptance as qualified members in the international engineering community. English was also considered as the dominant information carrier in engineering and an essential factor for efficient study and academic success. However, a few participants believed that conceptual engineering knowledge is more important than English literacy, and mathematics or diagrams are more important media of communication.

In particular, KSs were concerned with communicating with engineers of various nationalities who were studying in Korea. Students as non-native English speakers had a tendency to consider themselves as being less effective, powerless and disadvantaged within the engineering community. They perceived that both English and engineering knowledge are crucial for accomplishing academic tasks. KLs were concerned about students' poor English competence, seen as far behind international standards, and proclaimed the importance of English for enabling elite students to study successfully in the global academic community.

USs emphasized a pivotal role of English for academic survival, and proclaimed that a good command of English is essential not to make their work be considered as a failure. They valued English regardless of the duration of their stay in the UK or other foreign countries. ULs stressed the importance of oral/aural communication and comprehension in English when supervising Korean students. They estimated that students require about 2 years of struggle to overcome major difficulties in English in UK institutions, and provided Korean students with additional help over basic grammar in English.

6.4. Discussion

The role of English appears to be central for Korean postgraduate engineering students in both Korea and UK academic contexts; this was clearly demonstrated by the data from all groups of participants throughout the questionnaires and interviews. From the findings, several issues may be singled out. Firstly, the recent social move towards globalization seems to have created a radical shift in the attitudes and perceptions of engineering academics concerning English as an essential medium of communication. This is because globalization has led Korean engineering students to have plenty of opportunities to communicate with foreign engineering academics, with an increasing degree of interaction whether in Korea or the UK. Local engineering academic contexts seem to become more diversified

and multicultural, and require more efficient and frequent interactions with other nations worldwide.

In these circumstances, the importance of English competence, academic efficiency and coordinated participation seem to be significant in the engineering academic community. Students thus seemed to be aware of the massive role that English now plays as an international language in both contexts, as they proclaimed that English is not just for English majors or native English speakers. For this reason, as Canagarajah (2006:14) puts it, the binary categorizations of ESL and EFL contexts and of native and non-native speakers appear to be becoming blurred. This implies that the notions of academic community and global participation are being strengthened among engineers in the era of globalization.

Secondly, as a result of these developments, all groups of participants demonstrated the importance of English for Korean postgraduate engineering students, irrespective of contexts (Korean and the UK), the status of participants (lecturer or student) and the years of students' stay in foreign countries. English was viewed as an essential and major tool of international academic communication enabling engineering students, wherever they are, to participate in the global community of practice, to access global resources, to present their findings and to gain proper recognition worldwide. This result is in agreement with Holliday (1995), who reported that the role of English was crucial for communication in the multinational engineering industry in Saudi Arabia. It also agrees with Ramani *et al.* (1988), who showed the significant needs for English communication skills among science and technology postgraduates in an institute in India.

Lecturers in both contexts perceived that English was more important for postgraduate than for undergraduate students. It seems that the higher the students' academic levels are, the more English is crucial for them "to gain recognition," to "be talked about, written about" and "to be the subject of communication" (Ahearn, 2006:111). Flowerdew *et al.* (1998) also showed that more mature students were perceived by lecturers to be more aware of the value of English for their academic careers in Hong Kong Chinese University.

Although statistical analysis of the questionnaire data did not demonstrate significant differences (p=0.074) in perceptions among the groups of participants (Table 6.1), the percentage values additionally indicated that groups of lecturers tended to perceive English as slightly more important than did the students themselves. [86.7% of ULs and 67.6% of KLs replied that English is critically important, while 59.6% of KSs and 43.8% of USs did so.] This is probably because lecturers have considerable experience of using English for academic practices throughout their careers, and may therefore have clearer views than students on the importance of English for students' work in the academic community. This result is in agreement with Hutchinson and Waters (1987) and Chia *et al.* (1998).

Thirdly, English is hence considered as a powerful language. This causes various kinds of perceived needs and problems concerning English for Korean students in the UK and Korea. Competent English users are seen as empowered. Korean students have not only individual needs, such as those relating to written and spoken communication tools needed for academic fulfilment and study efficiency, but also sociocultural demands, including those involved by acceptance as qualified members and interactions in the international engineering community. Given that English is "a contact language for international relationships" (Canagarajah, 2006:25), malfunctioning and struggling due to lack of English skills and sociocultural mismanagement may lead to *fatal* disadvantages, an "identity crisis" (Ivanic, 1998:12) and obstacles to students' academic development and success. These situations indicate that English learning involves complex tasks including both aspects of literacy and social competence in the engineering community (see Chapters 7 & 8).

Fourthly, the current academic condition in Korea has led to a situation where the medium of communication frequently shuttles between English and Korean. That is, English use and skills facilitating bilingualism are expected for students who wish to study effectively in Korea. Flexible attitudes and strategies are thus demanded from students and lecturers, who need to adapt to situations of 'code-switching' and 'code-mixing' to allow appropriate information exchange, neither ignoring any other languages nor avoiding any situations in which English is used.

For example lecturers give lectures in English in the class; however, students are allowed to speak Korean during or after the class in order to ask personal inquiries or questions. In addition, lecturers translate some technical terms in English into Korean seeking students' effective conceptualisation of the terms during the class. The strategy of code-switching is likely to become a norm in the future in EAP classes both in Korea and other countries which are moving to English medium situations. Flowerdew *et al.* (1998), Hill and Zyl (2002) and Holliday (1995) also proclaimed that multilingual accommodation and strategies were effective for proper communication and were a crucial academic and professional resource in Hong Kong Chinese University and the South African and Middle Eastern engineering working sectors.

Fifthly, the majority of Korean participants considered English as being equivalent to, or more important than, subject knowledge in performing academic tasks of engineering. Moreover, they perceived that their English competence develops as they accumulate knowledge of engineering in the discipline. This recognition seems to be related to socio-constructivist studies, which show that students "learn the language of their disciplines as part of their apprenticeship in research (Myers, 1988:148)." This finding opposes the assumption made by Allen and Widdowson (1974) that conceptual knowledge of science and engineering exists separately from language. The particular variety of linguistic rules and skills seems to be integrated with the specific knowledge and culture within the discipline, rather than skills and languages being transferable to other disciplinary areas.

UL-1, on the other hand, made light of English and skills in comparison to conceptual understandings of engineering (see section 6.2.8), probably because engineering lecturers may be unclear about the role of literacy (Braine, 2001a). A few Korean students and lecturers also replied that mathematical symbols are more important than English (see section 6.2.8). Historically, engineers have tended to consider language as a tool, and emphasized mathematics or diagrams as the more important vehicle of communication (Ahearn, 2006:111). However, language and skills are the main medium of conceptualization of content knowledge and

communications for academics in the community. This is because "discourses carry assumptions about knowledge, relationships and how these should be structured and negotiated" (Hyland, 2000:155). Moreover, the contemporary academic world asks students to communicate with people and participate in numerous academic practices. Therefore, for students, discipline-specific English, oracy and literacy cannot be neglected, and tailored EAP programmes are obligatory to improve the particular variety of English for engineers.

Nowadays, engineering postgraduate students face multiple and diverse global contacts in multicultural academic contexts. Engineers in some cases need to communicate with people from various backgrounds to solve problems in real-life situations. These situations require flexibility, cultural sensitivity and general communicative competence on the part of engineering students in communicating with engineers or lay people from other nations. This implies the need for flexible EAP programmes for Korean and other L2 students, and students should be guided into general communicative competence as well as discipline-specific literacy and culture along the *continuum* through tailored EAP programmes (see section 3.6) so as to participate effectively in the academic practices of engineering.

Sixthly, students were pressured by the requirement to acquire at the same time certain levels of English skills and conventions as well as engineering knowledge during their study. They perceived that this is a great burden and extremely time-consuming, because they see English as a separate subject rather than integrated with engineering contents, norms and disciplinary culture. A great number of students perceived that they were disadvantaged and ineffective in academic practices in comparison to native English speakers, since engineers often work within "the constraints of time" and must consider efficiency (Donald, 2002:68). Although lecturers in Korea were concerned about students' English competency, which was below the international standards, students tended to delay studying English, because they were busy managing the requirements of subject tasks, they did not want to invest their time in studying English remote from their academic interests (cf. section 5.1.1) and there are rarely specialized EAP programmes for

engineers (cf. Chapter 2). UL-5 estimated that USs suffered for around two years due to their lack of English competence, when they come to the UK to study without proper preparation through learning English. These comments strongly support the view that Korean engineering students need to be provided with specially focused EAP programmes for engineers in Korea.

Finally, in teaching EAP to students in Korea, EAP teachers should ask themselves what kind of English should be taught. Korean academic sectors now have more students and lecturers from non-Anglophone countries than from Anglophone countries, and a non-standard variety of English may be used in some informal or oral communication situations. Nonetheless, engineering contents and information are mostly communicated in International Engineering English (IEE) (cf. section 3.7.2), and students and lecturers' priority in the teaching and learning of English is to ensure efficient communications in the international community. Therefore it may be reasonable to focus on IEE in EAP programmes, that is, a particular variety of English for engineers at the international level. EAP needs to facilitate the specific communicative skills, rhetoric, genres and academic conventions in IEE, which are expected in the global academic community of engineering.

However, it would be a mistake for EAP teachers to apply 'native speaker models' to Korean students. This is because the native speaker versus non-native speaker dichotomy is being challenged nowadays within multicultural academic settings (Canagarajah, 2006; Kramsch, 1998b). Therefore 'literate English' is not the exclusive province of native speakers (Wallace, 2002), and in specialized contexts, like engineering, non-native speakers may speak better English than native speakers. The notion of native speakers of English cannot confirm an academic identity in the community of practices (Swales, 2004:57).

To summarize, this chapter has demonstrated that globalization has affected engineering lecturers and students, whether in the UK or Korea, to perceive the imperative role of English as the main medium of international communication for academic work and study efficiency in engineering, and as necessary to obtain international recognition in the global academic community. This indicates that

English learning involves wide and complex tasks, including both discipline-specific literacy and social competence and flexibility. Particularly tailored EAP programmes for L2 engineering students are called for. In the next chapter, I shall focus on the skills-based needs of Korean students as reflected in the participants' perceptions of the academic practices of engineering in the global age.

Chapter 7. Skills and Academic Practices in Engineering

This chapter aims to present findings on the skills-based needs of Korean postgraduate students (research question 2) as perceived by students themselves and by subject lecturers in the academic practices of engineering. Their preferences and problems regarding skills are discussed with reference to two levels, language skills (macro skills) and study skills (micro skills), although the boundary between these is not clear-cut (cf. section 4.2.1). Firstly, I will draw on data concerning the relative importance of each language skill. Then I will discuss specific features of the students' needs for study skills in the 'academic practices' (cf. section 3.2) of the engineering community. The chapter also addresses the reasons given for these preferences and the related problems for students in their academic settings in Korea and the UK.

7.1. The Needs related to Language Skills

In this section, I will consider the participants' perceptions concerning the relative importance of the four language skills for students and the reasons for this in their situated contexts of engineering. I shall argue that ultimately all of the language skills need to be addressed in teaching EAP for real-world use in the engineering academic community. These findings are based on data collected from questionnaires and semi-structured interviews.

7.1.1. The Relative Importance of the Four Language Skills: Questionnaire Results

Each group of participants expressed views about important language skills for Korean engineering students in response to question 7 in Part B of the

questionnaires (Appendices II-V). Table 7.1 and Figure 7.1 show the importance of each language skill as perceived by the groups of participants. Among KSs and KLs, *reading* skills were given the priority as essential language skills, as the sum of scores for reading skills was the highest. *Writing skills* were ranked second, followed by speaking and listening skills. The priority of reading is probably because reading is largely used as a major skill to obtain information in the Korean context. KLs were more concerned with writing skills than students were, presumably because KLs looked for students' competent writing skills in use to demonstrate their findings and ideas in written formats.

USs were predominantly concerned about *writing skills* (S/N=3.13). *Speaking* and *listening* skills followed next in significance. These findings can be explained by the fact that the academic achievement of students is mainly evaluated from written products in the UK. Students may also frequently require speaking and listening skills for numerous communicative practices in a country where English is dominant. Reading was least considered by USs, probably because they believed that they were accustomed to reading skills compared to other skills. The importance of each language skill was evenly balanced in ULs' perceptions, according to the questionnaire data. They were likely to consider *all four skills* as almost equally important for Korean students undertaking academic tasks in the UK, although speaking was a little less highly ranked than the other skills.

Table 7.1. **The Importance of Language Skills**

Question 7	KS (N=153)*		KL (N=33)*		US (N=16)*		UL (N=15)*	
	Sum	S/N	Sum	S/N	Sum	S/N	Sum	S/N
Reading	479	3.13	106	3.21	32	2.00	41	2.73
Writing	391	2.56	99	3.00	50	3.13	40	2.67
Speaking	344	2.25	59	1.79	38	2.38	35	2.33
Listening	306	2.00	62	1.88	38	2.38	40	2.67

N.B. The sum is calculated by summing all the designated numbers (4: the most important, 1: the least important) selected by all participants. The smaller the sum, the less important the language skill is. S/N is calculated to compare the relative importance of each skill among groups. * Some participants did not rank the skills in order. A few gave the same numbers for all skills (ex. 4,4,4,4).

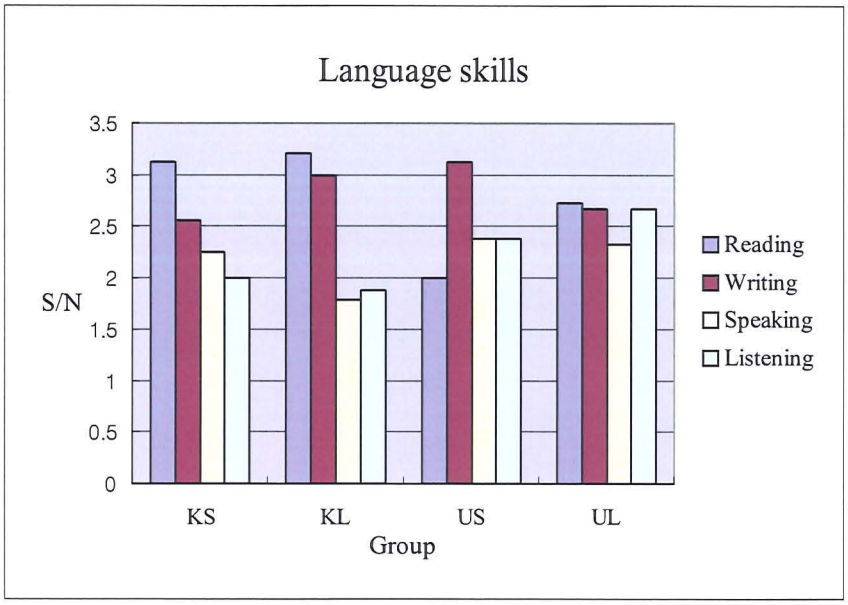


Figure 7.1. **The Importance of Language Skills**

So far, the preferences of KSs and KLs seem to be inclined towards reading and writing skills and USs appear primarily to value writing skills, but it is problematic to assess the relative importance of skills by only relying on the ranking system in the questionnaire. This is because, when the importance of skills is perceived to be almost identical or is difficult to differentiate, respondents can be confused as to how to rank them (Ferris & Tagg, 1996b). Particularly with a small number of participants, the data on ranking should be interpreted cautiously. To examine the subjective perceptions and the reasons for language skills needs, selected participants were requested to take part in an in-depth interview in which to describe which language skills in English were perceived to be important or deficient, and why they made these judgements in their academic domains.

7.1.2. The Importance and Problems of Language Skills: Interview Results

In the interviews, all groups of respondents revealed that *all* language skills were crucially important for students undertaking academic practices in both local contexts, although each participant highlighted different skills, according to his

situated academic practices and individual weaknesses or preferences. The roles and the particular use of each or several language skills in engineering contexts were commented on, as follows.

7.1.2.1. Reading Skills

At College K

KSs and KLs believed that reading was important as is indicated by the questionnaires (section 7.1.1), because it was a required *basic* skill and *frequently* used in the Korean context.

> I am only a student. I need to accumulate much knowledge, and the most important medium of study is texts... Reading is the prior way to obtain a lot of information from academic literature in the domestic area. All engineering subject materials such as papers, journals and so on are written in English (KS-7P).

> Reading is the basic skill in... producing written and oral presentations of researchers' work (KS-8P).

> Reading other foreign literature is a basic skill needed in domestic engineering fields. Without having proper reading skills, it is not possible to follow up classes and research, and students use reading skills more than any other skills during their academic process (KL-8).

Some students believed that they had acquired a reasonable level of reading skills and were confident in reading in comparison to other skills, as it is possible to revisit written texts.

> Although we, most Korean students, have great skills in reading, ... (KS-9M).

> Reading skills have been acquired at a certain level by now and we can read materials over and over again (KS-4P).

At College U

ULs reiterated that postgraduates basically gain *most* of the information which they need through reading and understanding various text resources, and based on this information they are able to learn what they want to learn.

> What really matters is their reading, top priority. Students will get most of what they know, I guess, through reading lecture notes, books and work examples. English is pretty critical

there... If you're acquiring knowledge, you need to be able to read the notes which you're given, textbooks, and the other things. If you could do this, if you could listen and understand and read and understand, then you're going to learn something you're going to acquire knowledge you are trying to acquire (UL-2).

Evidently, reading was considered as a primarily necessary skill to advance students' academic practices in both contexts. While students in Korea tended to consider reading as manageable skills, lecturers in both contexts expressed the essentiality and importance of reading skills for students' academic practices.

7.1.2.2. Writing Skills

At College K

Writing was considered as the essential practice for communicating, and for contributing their findings to the existing knowledge about engineering even in the Korean domestic context. KSs and KLs emphasized the importance of *well-written* papers; however, KSs perceived their deficiency in writing skills.

> Writing is essential to transfer information and ideas, and to develop engineering fields... After one writes a paper well, he or she may have a chance to present it in public (KS-18P).

> Well-written papers expressing their own findings and arguments are most important for students, and technical contents are mostly communicated by written documents. Writing papers is the important job for postgraduate students, and writing in English is the basic skill needed, even in domestic engineering fields (KL-2).

> In particular, writing skills are not only important but also deficient for most Korean students (KS-9M).

At College U

USs seem to rely heavily on writing skills to present reports and to communicate the results of experiments, because only work presented in papers is going to survive as publications or will be *evaluated* by supervisors or sponsoring companies to establish the degree of students' academic success. Students' *own explanations*, showing their understanding of the meanings of the results, figures and experimental procedures in their written products, were considered more important than the work itself undertaken in experiments in the field or the

laboratory.

> In engineering, presenting and writing status reports, communicating experimental results and explaining reasons why my experiments are important are crucial jobs. Even if we use graphs or diagrams to show our results, it is more important to explain my understanding in English, what the process is, and what the meanings of the results are, than the results or graphs themselves. So English is crucial (US-8P).

Ph.D. students are required by ULs to write up their own findings, experimental processes, interpretations and ideas in their own words, rather than just citing and reproducing others' work.

> While for undergraduates, reading and citing books and work people have done are important, if you come to Ph.D., it is important to put their works into their own words, for example, *I* have done such and such an experiment and the outcome of the experiment is X, Y, and Z. That is, writing an article, writing their own ideas, are important (UL-1).

M.Sc. students tended to feel pressured by the demand for correct grammar in writing.

> Writing is the most needed skill for me. I feel some pressure due to writing. Publication is the way to present what we have done in the research (US-15M).

> Writing is most crucial, as it will be shown in the end when the dissertation is handed in... In writing, I need to know grammatically correct English (US-14M).

They were also required to get through the written examinations with writing skills which were adequate to explain why they had chosen certain approaches to solving problems in the given tasks.

> Exams are important to pass as well. Exams include more problem-solving tasks (US-9M).

Proficient writing skills were greatly valued by all groups in both contexts. USs were required to produce a wider variety of writing including examinations than KSs, and ULs emphasized the importance of Ph.D. students' own ideas communicated by writing papers.

7.1.2.3. Reading and Writing Skills

Numerous respondents in the interviews illustrated the importance of various skills in supporting each other. For instance, Korean participants in both contexts considered that reading and writing were *inseparable* and that one's good writing skills came from good reading skills.

> Once one can acquire writing skills, reading skills will follow naturally (KS-18P).
>
> I think if I write well, that also means I can read well (US-8P).
>
> It is necessary for students to read many good standard samples of technical writings and texts and write in a well-organized way or practise by themselves (KL-1).

KSs perceived both reading and writing as the *basic* crucial skills for sharing ideas with other engineers in the community.

> The basic issue in doing engineering is to be able to understand others' work and to share our findings with others. In doing these jobs, both reading and writing skills are very crucial (KS-1P).

USs also indicated that, during the Ph.D. courses, they spent most of their *time* on reading and writing.

> In the UK, there is not much course work, and we usually participate in projects during postgraduate courses. We go to conferences once or twice a year. The majority of time is spent writing and reading (US-7P).
>
> At the PG level, we need to read many books and references, and also spend much time writing papers. So reading and writing skills are more important than listening and speaking skills, considering the time we spend (US-5P).

7.1.2.4. Speaking Skills

At College K

Speaking skills were considered pivotal in Korea, because KSs nowadays have more chances to present at international conferences or to collaborate with foreign researchers than before. They were aware of the demands for natural, clear and

prompt speaking so as to have *good relationships* with foreigners.

> To collaborate successfully with foreign researchers and to have good relationships with foreign buyers in the global era, we need fluent speaking skills (KS-4P).

> As international seminars and meetings are being held more often... speaking skills are more and more important (KS-13PD).

> Expressing opinions should be comfortable and natural in doing research... Speaking should be effective, clear and prompt without hesitation (KS-12P).

Students were aware that they were deficient in speaking and were in need of more opportunities to exercise formal or informal speaking skills in the local context.

> As for me, I have acquired reading and writing skills to some extent. So, I need to improve speaking skills (KS-13PD).

> Despite the importance of oral communication in engineering, the amount of time and chances to practise speaking is relatively limited (KS-12P).

Recognizing the difficulties in students' speaking, KL-14 also emphasized that students needed to speak *clearly* and *fluently*.

> Our students can speak English at least to transfer their ideas to others, but they may have difficulties in speaking English fluently... They should be at the level of speaking English fluently (KL-14).

Despite the growing demand to speak English, students seemed to lack credible speaking skills in the Korean context.

At College U

USs conceived of speaking as the *prime* skill, mainly to manage social relationships and explain their ideas or research plans to supervisors and colleagues, and to persuade or demonstrate that their study is valuable and notable at conferences or seminars.

> Speaking is the most important. Once we receive a project, we develop our ideas for it. When we have a meeting with the supervisor, we need to state our ideas clearly... In addition, to maintain a good relationship with our supervisor and to present what we did at professional meetings, speaking skills are crucial (US-4P).

> If I go to the conferences and I cannot speak well, others would feel that the thing I speak about is not important. One day a professor from Korea came to the international conference here, and I couldn't understand what he was saying in English at all. Although he wrote an excellent paper and came to the conference, next thing he should have done was to explain clearly to others what he did (US-8P).

USs tended to consider speaking skills the most difficult to improve, requiring more exercise and experiences in real-life situations.

> As for me, speaking is the weakest skill. As time goes by, we acquire listening skills naturally. It is however very difficult for us to speak so as to express in detail and fast (US-11P).
>
> To speak well at conferences, it is important to practise and experience in the actual situations (US-8P).

ULs were concerned about students' speaking skills in asking questions and requesting clarification.

> And speaking is important along the level of if they don't understand something, they need to ask for clarification and they need to ask questions (UL-3).

Thus speaking skills were seen as crucially demanded in both contexts for social relationships and academic performance.

7.1.2.5. Writing and Speaking Skills

At College K

KLs emphasized the importance of both writing and speaking skills for postgraduate students, to enable them to *express* their research and findings at international conferences or in journals.

> For PG level students, just having a reading skill is not enough. They also need to express their research and the work they've done not only by speaking, but also in written forms of literature such as journals and conference proceedings. The essential component is writing and expressing himself or herself in a systemic, clear and straightforward manner (KL-1).

At College U

ULs highlighted that all the tasks of writing and speaking were perceived as important processes in training students as 'proper engineers' and experiencing the expectations of the global academic community.

> You can't work in engineering without the ability to express your opinions and your thoughts, whether by talking to colleagues or writing them in reports... To become a proper engineer, you need to communicate either by speaking or by writing. So they are equally important (UL-4).

> The ability to write papers and present is a very important aspect of the training of any research scientists. The other important point is that presenting and publishing papers increases their visibility in the international community, important in their career development and especially in getting a job. We monitor the progress of our students every six months (ICL-5).

Thus both groups of lecturers strongly underscored the importance of adequate speaking and writing skills for postgraduates to express their work and opinions in the global community.

7.1.2.6. Listening Skills

At College K

Listening was also prioritised by some respondents in Korea as a fundamental skill required for students to understand comments and acquire information effectively and clearly at talks, lectures or conferences, where communication is conducted in English nowadays in Korea. Listening was, however, perceived as much harder than reading because students cannot revisit the text.

> First of all, we need to listen to others' ideas well, because listening is the first step preceding further work and presenting their own ideas and opinions... When we are able to listen first, then, we can acquire other skills... Reading and listening skills are equally important, but reading skills have been acquired at a certain level by now and we can read materials over and over again, but if we do not understand while listening, we lose a chance to catch the points (KS-4P).

> They can manage to speak anyway, although their speaking is clumsy and it will take time to

have good speaking skills. But, if they cannot listen to others' talks properly at seminars and conferences, then they may have huge difficulties in communication (KL-14).

We see that whereas in previous years reading was the only major skill needed to acquire information in Korean academic settings, now listening is also considered as fundamental for performing academic practices. This change indicates the extension of English language oral/aural communications within the Korean academic settings.

At College U

USs commented that the use of competent listening skills must *precede speaking* in supervision and discussion, because supervisors do not make notes or repeat themselves for students. The degree of listening comprehension is likely to relate to students' prior background knowledge of the contents.

> Sometimes I cannot catch what others are saying if the topic is totally different from my major topic. As for me, I cannot speak without first understanding what others are saying (US-7P).

> The supervisor does not write his comments, but speaks them when we discuss in a one-to-one conversation (US-4P).

ULs were deeply concerned about students' understanding of what supervisors say, because deficiency in the listening skills of students was considered as 'fatal' for lecturers to transfer information and directions to them in problem-solving activities.

> Students need to communicate with lecturers or understand lectures, as lecturers often do not repeat information... a major problem in supervising is they don't understand what I want (UL-1).

> To me, it is important to understand what is being posed as a problem and to communicate responses that can be understood, because errors in communication are fatal in teaching engineering subjects (UL-3).

Listening skills are therefore crucial particularly because the information offered during oral communications is not repeated in both academic settings.

7.1.2.7. Speaking and Listening Skills

At College K

KSs were well aware that both speaking and listening skills were crucial for questioning and answering at seminars and meetings with foreigners.

> With fluent speaking skills, we can keep good relationships with foreign buyers. To collaborate with foreign researchers successfully in the global era, first of all we need to listen to others' ideas well (KS-4P).

These oral/aural communication skills were considered by students more important and difficult to acquire.

> Speaking and listening skills are more crucial than reading and writing skills. Reading and writing skills can be overcome by studying alone and can be managed by our efforts... But speaking and listening cannot be acquired in a short time. Continual listening and speaking practices are needed. Also, if we go abroad or to international conferences, if we cannot reply directly to the questions, we may face great difficulties (KS-6P).

At College U

Clear listening and fluent speaking *go together* in enabling USs to explain and discuss their research with supervisors and colleagues and also to contribute in the discussion.

> Speaking and listening are the most crucial factors now. I wish I could understand others clearly and transfer my ideas fluently to make them understand. While I do experiments, I need to explain my research plan and discuss with the supervisor in the group seminar held once a week or sometimes daily. When I can't do it properly, I feel frustrated (US-12P).

In short we see that the requirement of competent oral/aural communication skills made Korean students anxious about these skills in both contexts.

7.1.2.8. All Language Skills

All language skills appear to be important for Korean students in any contexts, because none of the skills can be neglected in academic practices and Korean students, as non-native speakers, may lack any of them. This lack may occur

because "skills are not normally activated in isolation from each other" in real-life situations (Johnson & Johnson, 1998:322).

> All four skills are interrelated and important (KL-3).
>
> All four skills are important and I am weak in all skills (US-16PD).

However, ULs suggested that there was a rough *order* of postgraduate academic progression, each stage of which required certain language skills. That is, students may need to read and listen first, and then speak. Writing usually comes later, to report their research in written formats.

> You can't say that one is more important than the other. Obviously, listening and comprehending are the first steps, but then communicating by speech and by writing is equally important in the engineering field (UL-4).
>
> For PG students, it is much more reading and then speaking, listening with the supervisor. Writing comes in a lot later. The most important thing for students is they have to be able to read and understand their lecture notes and books. The next important thing is that they have to be able to understand lectures or things they have to do in classes. All the assessment is done in writing. So writing is important (UL-3).
>
> At the beginning of the programme in particular, it is very important to understand what actions are required, what is being said, what is written in instruction manuals and how to operate the instruments. Then communication of what students have done comes next. First orally and later in writing (UL-1).
>
> If you're acquiring knowledge, you need to be able to read the notes which you're given, textbooks, and the other things. If you could do this, if you could listen and understand and read and understand, then you're going to learn something; you're going to acquire knowledge you are trying to acquire. Writing and speaking is demonstrating that you have acquired it. Obviously this is important because you're going to have to pass exams. But you have to get it on board first. You learn the information by listening and reading. You are demonstrating by writing and speaking. That's the rationale there; there is sort of a logical sequence and that to my mind is the sequence of importance (UL-2).

Thus as indicated by the questionnaire data in section 7.1.1, most ULs commented that all of the skills were important as they worked collaboratively, but that there

was a sequence of skills linked to students' academic progression throughout the long years of academic training.

7.1.3. Summary

All groups of participants affirmed that all four language skills in English were essential for students to participate in academic practices, whether in Korea or the UK. Therefore the balance of oracy and literacy was perceived as being crucial. In addition, ULs articulated that each language skill took on a different prominence and importance over students' academic progression.

In particular, a number of respondents reported that reading and writing were inseparable from each other, and are fundamental skills for sharing ideas in the community. Oral/aural communication skills were crucial for social relationships and interactions with foreign engineers as well as for academic performance. Lecturers in both countries highlighted the importance of speaking and writing skills in expressing postgraduate students' work and ideas. Additionally, participants in the UK clearly indicated that academic writing for Ph.D. students needed to include writers' own interpretations of the data, figures and experimental procedures. Korean students in both contexts were anxious about their levels of competence in the writing, speaking and listening skills needed to pursue their academic goals or engage in academic practices.

The uses of all language skills are contextualized within the engineering discipline (cf. section 6.2.4), and the academic practices are "a kind of filter for the subsequent specification of a range of micro-skills (study skills)" (Candlin *et al.* in Johnson & Johnson, 1998:108). The following section will thus address the specific study skills needed by Korean students in the academic practices of engineering.

7.2. The Needs related to Study Skills

The particular needs in study skills required of Korean postgraduate students in the academic practices of engineering are discussed as these were indicated by the questionnaire survey and interviews.

7.2.1. The Important Study Skills: The Questionnaire Results

First of all, to identify study situations in which students use English and the extent to which they use it, in question 8-1 of the questionnaire (Appendices II & III), KSs and KLs were asked to tick the study situations where they mostly communicate in English. This is because students use English with varying frequency according to the process of code-switching between English and Korean in academic practices in Korea, as I discussed in Chapter 6. *Ratios of English Use* (REU) were calculated by counting ticked numbers divided by the participants' population (n/N). The REU values for each study situation for KSs and KLs are shown in Table 7.2.1.

Table 7.2.1. **Ratios of English Use (REUs) in Study Situations in Korea**

Study Situations	KS (N=156)		KL (N=34)	
	n	REU%	n	REU%
Lectures/ Talks	**85**	**54.5**	**24**	**70.6**
Seminars/ Conferences	**131**	**84.0**	**26**	**76.5**
Tutorials/ Supervisions	4	2.56	3	8.82
Practicals/ Laboratory Work/ Fieldwork	20	12.8	6	17.6
Private Study/ Reading Literature	**81**	**51.9**	**21**	**61.8**
Reference Material/ Library Use	**104**	**66.7**	**22**	**64.7**
Writing theses/ Reports/ Projects	**138**	**88.5**	**26**	**76.5**
Research	**101**	**64.7**	**14**	**41.2**
Written Examinations	35	22.4	9	26.5
Oral Examinations	6	3.85	3	8.82

Pearson's ρ =0.933

The REU values of KSs and KLs demonstrated strong correlations (ρ =0.933) across study situations; this signals the reliability of the REUs. Therefore, students

in Korea are seen to use English more frequently in writing theses/ reports/ projects, seminars/ conferences, reference materials/ library use, lectures/ talks, private study/ reading literature and research. In contrast, they seldom use English in tutorials/ supervisions, oral examinations, practicals/ laboratory work/ fieldwork and written examinations. In the UK, the REUs are assumed to be 100%, because students will invariably use English in all study practices.

In question 8, each subject was asked to reply on 54 items of study skills depending on the degree of importance in each study situation. The overall frequencies in responses to these study skills items are shown in Tables 7.2.2.1-7.2.2.11.

The perceptions of study skills needed in Lectures/talks (Table 7.2.2.1) did not show great differences between groups in the UK and Korea, as REUs were fairly high, which means that students often participate in English-medium lectures in Korea. Lecturer groups (KLs, ULs) were slightly more concerned about skills in lectures/talks than student groups, probably because one of the major roles of lecturers is to make students listen to the lectures and understand the contents as much as possible. All groups considered *Listening and Understanding* as an important skill. This skill was perceived to be more important than *Note-taking*, a result which agrees with interview data (section 7.2.2.1). *Asking questions* was clearly emphasized by ULs, because Korean students rarely ask questions during lectures, and ULs are sometimes frustrated by that, as discussed in the following Chapter 8 (section 8.2.2.2).

Table 7.2.2.1. **Skills in Lectures/Talks**

Question 8-1-1	KS (N=156)		KL (N=34)		US (N=16)		UL (N=15)		Total (N=221)	
	m	SD	m	SD	m	SD	m	SD	M	SD
1. Listening and Understanding	**3.39**	0.941	**3.65**	0.812	**3.25**	0.856	**3.73**	0.594	**3.51**	0.901
2. Note-taking	2.19	1.050	2.59	0.988	2.56	0.512	3.13	0.640	2.62	1.02
3. Asking Questions for Repetition, Clarification and Information	2.33	1.050	2.76	0.955	2.69	0.704	**3.13**	0.742	2.73	1.02
M	2.64		3.00		2.83		3.33		2.95	

N.B. REUs for KSs and KLs are 54.5% and 70.6% respectively.

Table 7.2.2.2. **Skills in Seminars/Conferences**

Question 8-1-2	KS (N=156)		KL (N=34)		US (N=16)		UL (N=15)		Total (N=221)	
	m	SD	m	SD	m	SD	m	SD	M	SD
1.Listening and Understanding	3.75	0.516	3.82	0.387	3.19	0.750	3.93	0.267	**3.67**	0.528
2.Presenting own works	3.50	0.758	3.79	0.479	3.38	0.719	3.87	0.351	**3.65**	0.708
3. Asking Questions	2.96	0.953	3.18	0.869	3.13	0.806	3.21	0.579	**3.12**	0.911
4.Answering Questions; Explaining	3.26	0.901	3.50	0.615	3.44	0.617	3.34	0.737	**3.39**	0.841
5. Organizing whole discussion or activity	2.57	1.18	3.12	0.946	3.19	0.750	3.21	0.579	3.02	1.12
6. Note-taking	2.08	1.03	2.41	0.957	2.88	0.806	3.13	0.834	2.63	1.04
7.Taking part in Debates	2.65	1.20	2.85	1.13	**3.25**	0.775	2.79	0.893	2.89	1.15
M	2.97		3.24		3.21		3.35		3.20	

N.B. REUs for KASs and KALs are 84.0% and 76.5% respectively.

All groups seemed to be acutely aware of the importance of study skills in Seminars/Conferences (Table 7.2.2.2). During these practices, students need to play an active role, participating in spoken communication. Therefore, *Listening and understanding, Presenting own work, Answering questions; explaining* and *Asking questions* were highly valued among all groups in this survey (M>3.12). *Taking part in debates* was clearly required by USs, indicating their concerns with participating in debates at seminars or conferences.

Table 7.2.2.3. **Skills in Tutorials/Supervisions**

Question 8-1-3	KS (N=156)		KL (N=34)		US (N=16)		UL (N=15)		Total (N=221)	
	m	SD	m	SD	m	SD	m	SD	M	SD
1.Listening and Understanding	1.42	1.61	2.09	1.64	**3.25**	0.683	**3.93**	0.258	2.67	1.69
2. Speaking with(out) notes; Reporting orally	1.32	1.51	2.00	1.60	3.19	0.750	2.93	0.961	2.36	1.57
3.Note-taking	1.03	1.16	1.50	1.31	2.81	0.834	3.13	0.834	2.12	1.32
4.Asking Questions	1.17	1.33	1.82	1.47	**3.19**	0.750	**3.21**	0.579	2.35	1.46
5.Answering Questions; Explaining	1.28	1.46	1.82	1.45	**3.63**	0.619	**3.33**	0.724	2.52	1.57
6.Taking part in Debates	1.24	1.42	1.85	1.50	**3.25**	0.775	2.79	0.893	2.28	1.50
7.Personal meetings with supervisors	0.96	1.18	1.15	1.28	**3.56**	0.629	**3.64**	0.497	2.33	1.45
M	1.20		1.75		**3.27**		**3.28**		2.37	

N.B. REUs for KSs and KLs are 2.56% and 8.82% respectively.

In Tutorials/supervisions (Table 7.2.2.3), there were clear differences in the importance of related study skills between groups in the UK and Korea, which is in agreement with the findings in the interviews (section 7.2.2.5). In the UK, participants converse all the time in English in supervision, while students in Korea normally speak Korean, with extremely low REU values. ULs particularly stressed

Listening and Understanding during supervision. Both ULs and USs were concerned with *Personal meetings with supervisors*, *Asking questions, Answering questions and explaining,* and *Taking part in debates* in supervision.

Table 7.2.2.4. **Skills in Practicals/Laboratory Work/Fieldwork**

Question 8-1-4	KS (N=156)		KL (N=34)		US (N=16)		UL (N=15)		Total (N=221)	
	m	SD	m	SD	m	SD	m	SD	M	SD
1.Understanding Instructions	1.91	1.64	2.03	1.71	3.19	0.655	**3.87**	0.351	2.75	1.64
2.Asking Questions and Requesting Help	1.56	1.45	1.91	1.64	3.19	0.750	3.33	0.617	2.50	1.51
3.Recording Results	1.43	1.33	1.71	1.47	3.00	0.966	3.36	0.929	2.38	1.43
4.Reading and Understanding Manuals	1.97	1.53	2.24	1.60	2.69	0.873	3.21	0.802	2.53	1.50
M	1.72		1.97		**3.02**		**3.44**		2.54	

N.B. REUs for KSs and KLs are 12.8% and 17.6% respectively.

Practicals/laboratory work/field work are essential activities during engineering students' academic lives. Postgraduate students may spend a longer time in the laboratory or sites of practical work than in other places. USs and ULs demonstrated the importance of relevant study skills in practicals (Table 7.2.2.4), and ULs were anxious about *Understanding instructions*. Instructions and guidelines for laboratory experiments must be clearly acknowledged by students; otherwise, the outcomes can be unexpected or dangerous, or require unnecessary repetition. However, participants at College K demonstrated low assessments of the value of English study skills in experiments and fieldwork, because KSs mostly solve problems and communicate in Korean.

Table 7.2.2.5. **Skills in Private Study/Reading Literature**

Question 8-1-5	KS (N=156)		KL (N=34)		US (N=16)		UL (N=15)		Total (N=221)	
	m	SD	m	SD	m	SD	m	SD	M	SD
1.Reading Efficiently: Comprehension and Speed	3.38	0.946	**3.53**	0.896	3.19	0.544	**3.47**	0.834	**3.39**	0.91
2.Understanding and Analyzing Graphs, Diagrams, etc.	2.88	1.15	**3.21**	0.978	2.94	1.06	**3.67**	0.816	3.18	1.11
3.Note-taking and Summarizing	2.44	1.07	2.74	0.963	2.63	0.806	3.27	0.594	2.77	1.03
M	2.90		3.16		2.92		3.47		3.11	

N.B. REUs for KSs and KLs are 51.9% and 61.8% respectively.

All groups were well aware of the importance of study skills in Private study/reading literature (Table 7.2.2.5). In particular, *Reading efficiently:*

comprehension and speed was clearly pointed out as an important study skill in both contexts. This is probably because effective reading skills correspond with study efficiency, as students need to read substantial numbers of articles and papers in order to design their own research and solve problems. Lecturer groups regarded *Understanding and analyzing graphs, diagrams* as important, because these text types are the prominent genres within engineering discourses (Hyland & Bondi, 2006).

Table 7.2.2.6. **Skills in Reference Materials/Library Use**

Question 8-1-6	KS (N=156)		KL (N=34)		US (N=16)		UL (N=15)		Total (N=221)	
	m	SD	m	SD	m	SD	m	SD	M	SD
1.Using the Contents/ Index Pages	2.24	1.29	2.71	1.03	2.56	0.892	3.21	0.893	2.68	1.23
2.Using a Dictionary Efficiently	2.01	1.18	2.44	1.08	2.13	0.719	2.40	1.12	2.25	1.14
3.Using a Library Catalogue on Cards, Microfiche and Computer	1.98	1.18	2.41	1.18	2.56	0.892	2.86	0.949	2.45	1.18
4.Finding Information Quickly	2.22	1.23	2.76	1.10	2.31	0.793	2.67	1.05	2.49	1.18
5.Collecting Information	2.46	1.26	3.24	0.89	2.69	0.947	3.07	0.884	2.87	1.20
M	2.18		2.71		2.45		2.84		2.55	

N.B. REUs for KSs and KLs are 66.7% and 64.7% respectively.

Table 7.2.2.7. **Skills in Writing Theses/ Reports/ Projects**

Question 8-1-7	KS (N=156)		KL (N=34)		US (N=16)		UL (N=15)		Total (N=221)	
	m	SD	m	SD	m	SD	m	SD	M	SD
1. Deciding on a Topic	2.97	1.03	2.71	1.32	3.25	0.931	3.00	0.877	2.98	1.07
2. Outlining Chapters	2.81	1.03	2.56	1.26	2.69	1.01	3.00	0.926	2.77	1.06
3. Planning, Writing Drafts, and Revising	3.09	0.97	3.15	1.13	3.00	0.966	3.20	0.941	**3.11**	0.986
4.Summarizing, Paraphrasing and Synthesizing	3.19	0.92	3.09	1.14	2.94	0.929	3.36	0.633	**3.15**	0.938
5. Continuous Writing in an Academic Style	3.33	0.90	3.24	1.05	**3.63**	0.619	3.21	0.699	**3.35**	0.898
6.Organizing Information Logically	3.15	1.11	3.00	1.21	3.31	0.793	3.27	0.799	**3.18**	1.08
7.Using Quotations, Footnotes, Bibliography	2.58	1.05	2.41	1.26	2.53	0.915	2.86	0.770	2.60	1.06
8.Using Charts, Table and Diagram	2.58	1.07	2.53	1.11	2.53	0.915	2.86	0.770	2.63	1.04
9.Drawing conclusions	3.23	0.95	2.97	1.24	3.25	1.00	**3.67**	0.816	**3.28**	1.00
10.Avoiding Plagiarism	2.74	1.18	2.47	1.40	3.00	0.730	**3.50**	0.760	2.93	1.19
11. Connection and Transition of Sentences	3.24	1.04	3.06	1.15	3.19	1.11	**3.60**	0.632	**3.27**	1.04
M	2.98		2.84		3.03		3.23		3.02	

N.B. REUs for KSs and KLs are 88.5% and 76.5% respectively.

All participants seemed to consider study skills for Reference materials/ library use

as being of medium importance (Table 7.2.2.6). Although these study skills in English are needed in both contexts, the skills are not likely to be crucial for the academic success of Korean postgraduate engineering students, partly because nowadays they can access various sources of information such as electronic journals.

On the other hand, the study skills associated with Writing papers, that is, *Continuous writing in an academic style, Connection and transition of sentences, Drawing conclusions, Summarizing, paraphrasing and synthesizing, Organizing information logically,* and *Planning, writing drafts and revising*, are highly esteemed by all groups (M>3.11) (Table 7.2.2.7). Participants in the UK revealed more concerns with these skills, possibly due to the expectations of high standards in writing papers. USs were particularly concerned about *Continuous writing in an academic style*, partly because they may sense clear differences between academic writing on engineering and everyday writing, as shown in interviews (section 7.2.2.3). ULs and USs regarded *Avoiding plagiarism* as an important skill in writing, while KSs and KLs were only slightly concerned about it. This signals sociocultural differences in understanding the ownership of texts (Pennycook, 1996), as discussed in section 7.3.

Table 7.2.2.8. **Skills in Research**

Question 8-1-8	KS (N=156)		KL (N=34)		US (N=16)		UL (N=15)		Total (N=221)	
	m	SD	m	SD	m	SD	m	SD	M	SD
1.Using Social Networks and Resources	2.28	1.44	2.18	1.55	2.56	0.892	2.60	1.12	2.41	1.41
2.Undertaking Surveys	2.20	1.40	2.03	1.55	2.69	1.01	2.27	0.961	2.30	1.41
M	2.24		2.11		2.63		2.44		2.36	

N.B. REUs for KSs and KLs are 64.7% and 41.2% respectively.

Study skills related to Research were not highly regarded as central skills by any groups (Table 7.2.2.8). This may be because the skills of *Using social networks and resources* and *Undertaking surveys* are more used in social science research than in engineering research. Engineering students are more involved with research in laboratory-based experiments.

Table 7.2.2.9. **Skills in Written Examinations**

Question 8-1-9	KS (N=156)		KL (N=34)		US (N=16)		UL (N=15)		Total (N=221)	
	m	SD	m	SD	m	SD	m	SD	M	SD
1.Preparing for Exams	2.22	1.49	2.24	1.50	3.13	0.957	3.47	0.834	2.77	1.47
2.Understanding Questions/ Instructions	2.24	1.42	2.29	1.45	2.75	1.18	3.67	0.816	2.74	1.42
3.Writing Quickly: Pressure of Time	2.01	1.44	1.85	1.54	2.63	0.957	3.07	1.10	2.39	1.43
M	2.16		2.12		**2.84**		**3.41**		2.63	

N.B. REUs for KSs and KLs are 22.4% and 26.5% respectively.

ULs and USs were concerned about study skills for Written examinations, which are mostly based on problem-solving tasks, as shown in interviews (section 7.1.2.2). KSs and KLs do not consider them seriously (Table 7.2.2.9), because in Korea students take hardly any written examinations in English.

Table 7.2.2.10. **Skills in Oral Examinations**

Question 8-1-10	KS (N=156)		KL (N=34)		US (N=16)		UL (N=15)		Total (N=221)	
	m	SD	m	SD	m	SD	m	SD	M	SD
1.Answering Questions: Explicitly, Precisely	2.29	1.75	2.59	1.69	3.35	0.632	3.93	0.267	3.04	1.69
2.Explaining, Describing, Justifying	2.26	1.73	2.59	1.69	3.44	0.727	3.79	0.426	3.02	1.68
M	2.28		2.59		**3.40**		**3.86**		3.03	

N.B. REUs for KSs and KLs are 3.85% and 8.82% respectively.

Likewise, participants at College U considered study skills regarding Oral examinations as serious issues, since students need to take a *viva voce* for Ph.D. defence in English (Table 7.2.2.10). At College K, participants were less concerned about oral examinations in English, because they mostly perform the Ph.D. defence with examiners in Korean.

USs and ULs predominantly affirmed the importance of *Logical thinking; constructing arguments,* and *Accuracy; stating problems clearly* (m>3.31) among Generally applicable skills (Table 7.2.2.11), which are relevant to reasoning skills within the engineering discipline (Donald, 2002), as discussed in section 3.7.1. *Grammar and expression, Pronunciation* and *Using computers* were valued by ULs (m=3.07), because ULs seemed to rate highly general English and basic study skills for Korean students. *Subject terminology* was of moderate concern for all participants.

Table 7.2.2.11. **Generally Applicable Skills**

Question 8-1-11	KS (N=156)		KL (N=34)		US (N=16)		UL (N=15)		Total (N=221)	
	m	SD	m	SD	m	SD	m	SD	M	SD
1.Logical Thinking: Constructing Arguments	2.54	1.43	2.83	1.60	**3.31**	0.873	**3.79**	0.426	**3.12**	1.43
2.Accuracy; Stating Problems Clearly; Making their own Opinions or Claims Clearly	2.67	1.43	2.65	1.70	**3.69**	0.479	**3.71**	0.469	**3.18**	1.43
3.Memory; Recall	1.81	1.23	1.53	1.19	2.50	1.03	2.43	1.09	2.07	1.22
4.Using Computers	1.97	1.23	1.85	1.37	2.94	0.929	**3.07**	1.07	2.46	1.27
5.Subject Specific Terminology	2.37	1.34	2.50	1.44	2.81	0.911	2.79	0.975	2.62	1.31
6. Grammar and Expression	2.57	1.32	2.71	1.38	2.56	0.814	**3.07**	0.884	2.73	1.28
7.Pronunciation	2.54	1.29	2.62	1.42	2.38	0.885	**3.07**	0.730	2.65	1.26
M	2.35		2.38		2.88		3.13		2.69	

For all study skills, the total mean values by each group of participants are shown in Table 7.2.3. The overall recognition of the importance of study skills was demonstrated to be higher among participants in the UK, and also among lecturer groups.

Table 7.2.3. **Total Means for Skills**

Group	KS (N=156)	KL (N=34)	US (N=16)	UL (N=15)	Total (N=221)
Mean	2.38	2.56	2.98	3.24	2.51

To measure the relationship between REUs and mean values of study skills in each study practice, Pearson's correlation coefficients were calculated. The results showed a strong positive relationship for both KSs and KLs [Pearson's correlation coefficients: ρ =0.709 for KSs and ρ =0.793 for KLs.] That is, when students have to use English more in their practices, the related study skills obviously become more important in Korea.

7.2.2. The Importance and Problems of Study Skills: The Interview Results

In the interviews, participants described in depth the most important and the most problematic study skills or strategies for students and the reasons for their

judgements in relation to the various academic practices both in Korea and the UK.

7.2.2.1. Attending Lectures

At College K

Attending lectures in English has recently become an important issue for students in Korea, as the opportunities to attend English-medium lectures are rapidly growing (see Chapters 2 & 5). Naturally, KSs had difficulties in understanding the contents in lectures given in English. KS-7, who had difficulty in note-taking during lectures, attempted to concentrate on listening, took notes only of the key words, and later complemented his notes by reading texts or other resources. For him, *listening and understanding* is more valued than note-taking in lectures, a position which agrees with the result of the questionnaire (section 7.2.1).

> When I attend lectures in English, I have difficulties in listening to the lectures, understanding the content and taking notes at the same time, because of course it is not my language. I can nearly manage to listen to and understand the lectures, but taking notes is another problem. So I just write the key words of the lecture and rely on the texts later (KS-7P).

KLs described the difficulty of students in listening and understanding complex technical engineering contents in lectures in English, which is different from normal listening.

> I sometimes have difficulty in explaining precisely in English in the lectures, and students also tend to have difficulties understanding lectures. So Korean students should have a certain level of English capability in order to listen to lectures (KL-9).

> When foreigners join in lectures and seminars, we speak English to discuss with them.... Because technical engineering knowledge is somewhat difficult, students are also very embarrassed in the English-medium lectures (KL-2).

However, as time goes by, students seemed to become used to and not avoid English-medium lectures. Moreover, students were likely to consider that participation in lectures in English was more helpful, probably because students could be exposed to English as well as subject contents.

> The number of students who seem to understand the contents and consider the lecture in English as effective is increasing. In the past, students tended to avoid attending lectures in English, but nowadays no one would avoid lectures only because they are spoken in English. Even if students have a hard time following the lectures, they seem to feel that the lectures in English are helpful for some learning results (KL-1).

In English-medium lectures, both students and lecturers tended to have difficulties in communicating technical contents and frequent code-switching is employed (cf. Chapter 6). Nonetheless, they seemed to perceive the benefits of English-medium lectures for students in Korea.

At College U

ULs were seriously concerned about students' participation in lectures (mostly M.Sc. students, as Ph.D. students do not take lectures.). They also considered that understanding lectures is more important than reading texts for students when learning about engineering, because lecturers explain the real values of subject knowledge orally and interactively.

> ...things like attending lectures and obtaining information, and that's critical (UL-3).

> I think listening and understanding in lecture and discussion, I have made that number one, the most important. If you could simply study engineering and learn engineering by reading a book then I wouldn't need to be in my job. I would do something else for a living. So clearly the added value you receive coming to somewhere like this to study is that people talk to you about the subject and explaining to you, and that's the real value, and that's why I am being paid to do this job which is to explain things to people so they get to understand what I am saying (UL-2).

Specific Terminology

As engineering is a fast-developing area, numerous up-to-date specific terminologies are emerging every day in international publications (Donald, 2002). Understanding particular *specific terminology*, which is mostly written and spoken in English, may be pivotal for enabling students to conceptualise the contents of their study both in Korea and the UK.

> Many specific terminologies are used in information transfer and communication. If students have knowledge of terminologies, oral communication can be easily understood (KL-11).

> In my area, the aerospace engineering field, most resources are from Western countries and written in English. Subject terms are all from English. So English is essential (US-15M).

Therefore KSs and USs seemed to be frustrated by the lack of proper references and of up-to-date resources explaining or translating specific terms into Korean. These are often provided only through the lectures.

> Engineering subject terminology in English is sometimes very specific, but we don't have many guidelines or indexes to understand terms. It is difficult to find resources written in English for study, and this becomes an obstacle to research (KS-10M).

> The most difficult thing in engineering is specific terminology. We must catch the concepts and definitions of the terms first of all. However, even if we have met the terms, sometimes we don't understand them. References do not exist for the terms... There is no other way to know the terms except through lectures. Sometimes professionals in the area come to school and offer seminars, and they are helpful too (US-6P).

> It is important to attend lectures, since no books can give us clear explanations of the exact terms that lecturers want for examinations (US-Q).

Thus attendance at lectures is crucial for the precise understanding of specific terminologies in English in both contexts.

7.2.2.2. Presenting Results at Conferences or Seminars

At College K

Nowadays, KSs have more chances than before to present at international or local conferences and seminars.

> Ph.D. students normally present one to four times, at least once, at international conferences, during the courses. M.Sc. students normally present at local conferences. However, when the quality of their papers is good, M.Sc. students will present at international conferences (KL-1).

Accordingly, KSs (particularly Ph.D. students) remarked that presenting their research findings in English at international conferences was enormously challenging.

> Presenting and demonstrating my own work internationally at conferences and seminars is very important (KS-13PD).

> It's very hard for me to present my results in English, although it does not happen frequently (KS-4P).

KSs required prompt, natural and fluent oral communication skills for their presentations, but noted the rare opportunities to practise for it in the local context.

> Despite the importance of oral communication in engineering, the amount of time and chances to practice speaking are relatively limited. Expressing opinions should be comfortable and natural, and we need to communicate effectively and clearly. Speaking should be prompt, without hesitation (KS-12P).

KLs strongly emphasized the need for oral presentation skills for elite students, who would aspire to be qualified members of the international community.

> We are teaching high level, highly qualified, elite postgraduate students. As a rule, they are supposed to present their results at open international conferences specializing in Mechanical engineering or Fluid Mechanics... There is no doubt about that. They do have a great deal of anxiety and apprehension about that presentation capability and skills and so on... In order to become a researcher of international reputation, you have to build that stage. If you don't go through this and if you stay on the domestic market, the domestic stage alone, you can't become an international researcher (KL-1).

KLs emphasized that speaking clearly and fluently, giving emphasis to key points and appropriate expressions, are important for students in formal presentations.

> Clearer and better expressions are definitely needed for presenting, especially in the engineering fields. Some Korean students just move on without emphasizing their main findings to other audiences when they present at international conferences, and listeners may not notice which ones are important when they listen (KL-9).

KLs appeared to worry about students' presentation skills. KL-9 pointed out that the lack of students' presentation skills originated in the teaching of English in Korea, centred on the training of general reading skills (not oral communication skills; see section 2.3) and resulting in students' lack of English competence and attitudes of reluctance to present their ideas and arguments (cf. section 8.2.1.1).

> So far, our English education has focused on reading skills. Therefore, in presenting, more precise and better expressions in English are problematic for students. Even if our students did the same things in their research, other foreign students, like American students, present as if they did huge amounts of work. On the other hand, our students express themselves as if they did only small things, although they did a great amount of work. It is a very important issue, I think. This comes from the fact that Korean students cannot use English well, as well as other factors like cultural aspects and personalities. So presentation skills are crucially necessary for students. Especially in the engineering area, students and researchers should make their research public. So how they can transfer and share the results to others is a critical issue (KL-9).

KLs perceived that students work hard and spend most of their time extracting data from experiments in the laboratory, but do not have time for practising oral presentation skills. This situation has led to unsatisfactory outcomes and frustration when students present at international conferences, regardless of the quality of their study.

> Students are too busy to spare time to practise presentation separately. They are in the laboratory all day, to obtain the results of their experiments. After getting results, making Power Points and practising twice or three times, they go to present at international conferences. It's far from satisfactory... I instruct my students to express at conferences at least 100% of what they have done (KL-13).

In spite of the need, KLs found that support for oral presentations in English is limited. They suggested that it is more important for students to get started in speaking with confidence during or as part of English programmes.

> They do need and should be trained with some presentation skills. When they go to international conferences, I ask them to do a rehearsal several times, correcting their pronunciation or suggesting using a loud voice to emphasize key points. But usually I cannot give them any further comments about English speaking... So, first of all, I would suggest that English teachers should give students confidence to orally express themselves in English. Students need to speak English, no matter how simple and poor it is. Spoken English does not need to be very complicated, fluent, well-pronounced and precise. It is most important first of all for English teachers to make students speak out in English (KL-2).

At College U

There were different expectations of oral presentations, depending on students' course levels just as in Korea. UL-5 (Ph.D. tutor) strongly expected Ph.D. students to present many times, offering at least *a poster* at a local conference and an *oral* presentation at international conferences, while UL-2 (M.Sc. tutor) commented that M.Sc. students present less and later, after finishing all their courses and writing their dissertations.

> We hope that a student... will have given a poster at our annual postgraduate research day which is usually held in May, and an oral at a major international conference. At the very least, they should have given a poster by the end of the second year and an oral presentation by the end of the third. The ability to... present is very important as part of the training of any research [engineer] (UL-5).

> We don't do lots of oral presentation, but there are some. But I feel that that can come later when it has to (UL-2).

The criteria for the poster for presentation, as a different modality of communication, are described by UL-5.

> The poster is based on the scientific paper, which is submitted at the same time. Thus this is an exercise in science and communication skills... I tell my students it is an exercise in communication and therefore the rules are (i) the poster must look interesting to somebody on the other side of the room, (ii) the poster is the basis for a conversation, therefore have nice logical sections, (iii) the emphasis should be on pictorial information, graphs and figures rather than text. You are not really expecting anybody to stand there for more than a few minutes. And, (iv) it includes contact information (UL-5).

Ph.D. students' presentation was perceived by US-6P just as important as their thesis writing for evaluation.

> In PG level, for the first two years, once a year we normally present and there are extra presentations for visitors. After submitting the thesis, we present at the conference... In my department, when examining our thesis, the content of the thesis is 50% and the other 50% is presentation. So presentation skills are important (US-6P).

Accordingly, USs were concerned with formal presentation skills, because through oral presentations their findings and achievement can be fully recognized or highlighted by colleagues at conferences. Students considered that they should present with confidence and clear explanations, defend logically, and justify their results in an appropriate manner. This involves reading many references, studying the field, more practice and general English proficiency such as pronunciation and grammar.

> During conferences, formal presentation skills are really important. Even if we have researched the subject well and explained it very well in writing, if we don't have good presentation skills or speaking manners in front of other people, it is a problem. Sometimes nobody can understand my or my Korean colleague's speaking, because we are not confident in the pronunciation and grammar of English... Anyone who present well look confident and seem to have great knowledge. To present well, we must read literature and we should be able to defend all areas (US-8P).

> Although we've got only 5, if we present it well, it suddenly becomes 10. We need more practice and need to speak slowly and clearly with confidence (US-2PD).

Presentation skills are crucially valued in both contexts. KLs attributed students' difficulties of oral presentation to poor English education, the dominant academic culture and the lack of time to practice presentation skills in Korea. In the UK, oral presentation was almost equally valued as writing theses, and a poster presentation was additionally required for Ph.D. students.

7.2.2.3. Writing Papers and Theses

At College K

Writing papers and theses in English to demonstrate their ideas and findings was considered as a pivotal practice for postgraduate students in Korea.

> Demonstration of researchers' findings is mostly done by means of writing papers. It is very important in engineering fields to express actively researchers' ideas and work by writing papers. Writing is the best way to present convincingly their achievement and the findings of their study (KS-17P).

KSs perceived that writing to communicate their work is difficult, and they tended to be instructed by their supervisors that writing should be distinctive, clear and precise, with understandable structures of English.

> Clear, tidy and distinctive expressions in writing are needed in engineering work. My supervisor keeps on saying, "Please use easy English when you write, otherwise others cannot understand your writing" (KS-1P).

> I have continually felt difficulties in writing a thesis (KS-4P).

Ph.D. students at College K were required to write theses in English and have to publish articles in international journals for graduation. For M.Sc. students, writing dissertations in English is optional.

> All Ph.D. students write theses in English and have to publish at least one paper in an international journal. Otherwise, they cannot graduate. About 50% of M.Sc. students write their dissertations in English (KL-1).

These requirements indicate that writing skills in English are enormously important for students. However, KL-3 commented that students neglected their writing skills until almost the final stage of their academic progress.

> Students may not be aware of the importance of writing skills until they write a thesis by themselves... My main target is to make students graduate. To gradate they need to write a thesis in English (KL-3).

KLs were concerned about students' deficient writing ability, and attributed this to students' lack of English proficiency and lack of skills in the logical development of ideas even in Korean throughout education from a young age. They reported that these deficiencies cause inefficiency for students when writing theses.

> Students have difficulties in writing seriously, not only because of deficient English proficiency, but also because of the lack of ability to develop ideas. Even if students write papers in Korean, when they translate them into English, it takes time and is inefficient. So if they don't overcome these difficulties in English, they will require more time to publish their findings. In that sense, students' writing skills should be improved. They cannot even write well in Korean, because they cannot logically establish their ideas and contents (KL-14).

> The writing skill is the most critical one. This comes from an elementary level of our

> educational system. Students' English writing skills are very weak, just like their ability to develop ideas logically (KL-8).

Although KLs correct mistakes in students' drafts, they normally expect students to improve writing skills *alone* by reading appropriate models of texts, which include the forms, genres and conventions of writing in the discipline.

> When students write theses or reports, I correct their English (KL-2).

> The attitude to studying alone and finding out knowledge by getting stuck into books without asking others may not be helpful to develop English oral proficiency... But it is necessary for students to read many good standard samples of technical writings and texts, write in a well-organized way and practise by themselves (KL-1).

Although lecturers in Korea are worried about students' writing skills, they do not seem to provide additional writing instruction in order to train students as qualified members of the engineering community. In addition, students are not stimulated to learn academic writing skills through English support programmes, because students are busy studying engineering, lecturers normally do not recommend the English courses, or the EAP programmes are not yet well developed to convey special disciplinary conventions for writing (see Chapters 2 and 5), as commented by a lecturer at College K.

> Students do not seem to rely on English programmes in the language centre. They usually overcome English problems alone by reading a lot of engineering texts and listening to seminars (KL-1).

These circumstances may be inadequate to train students with appropriate writing skills for the discipline to meet the standards of the global community. Well-organized EAP programmes to improve students' writing skills for their discipline are critically required for students in Korea, as KL-3 called for.

> Students' English writing skills are poor, so the skills should be improved through proper English education (KL-3).

At College U

USs perceived that their purpose in writing papers in English is *communicating*

with others and explaining their research and intentions to the community.

> In engineering, presenting and writing status reports and communicating experimental results so as to explain reasons why my experiments are important are crucial jobs. Even if we use graphs or diagrams to show our results, explaining my understanding in English about what the process is and what the meanings of the results is more important than the results or graphs themselves. So English is crucial (US-8P).

USs acknowledged that academic writing in engineering is deeply related to reading, analysing other papers and solid subject knowledge. Good writing was not considered just to come from general knowledge of English and general linguistic skills, but from clear understanding and thought concerning the contents of the research fields. It has totally different expectations from other types of everyday writing, as shown in the questionnaire data (section 7.2.1). Therefore writing skills cannot be regarded as separate techniques, but are strongly associated with the whole learning process in the discipline (cf. section 6.2.4).

> After finishing whole experiments, the next step is writing. A good and decent paper comes out when we clearly understand what we are doing and think about the whole suggestions and everything (US-4P).

> Subject knowledge and presentation are deeply related to each other... Likewise, writing the Ph.D. thesis is totally different from writing a normal letter, so the academic styles, terms, and structures are different. We definitely need to have academic English skills for our subjects (US-8P).

> Writing skills are important in academic affairs. Although I came to England when I was young, I feel that I still need to improve my writing skills. Skills like how to write formal reports and how to use specific terms should be continually acquired throughout the learning process... As we have clear results and visible scientific proofs to support the written arguments, our writing is straightforward (US-13P).

Writing needs to be *clear* in explaining students' ideas and research, and considering the expected readers. The target readers are normally diverse, and sometimes students' writing should be clear even to non-specialists in engineering, because not everyone has the specific knowledge of the area.

> In writing papers, we should express clearly our ideas to others. Even if we have our own

ideas, we Koreans often don't explain well because we presume that others can understand the contents and fields in which we are working. Sometimes a good quality paper is rejected for a conference, not because of the ideas, but because of unclear explanations (US-7P).

Publication is the way to present what we did in the research, with a simple, non-confusing and accurate writing style (US-15M).

When we do a project, we always think that it is necessary to present our findings and write proper papers clearly and understandably for others who do not have any knowledge about it, because each engineering area is very specialized and not everyone has the specific knowledge in that area (US-9M).

USs described how academic writing in engineering requires developing ideas logically, explaining the authors' own arguments and interpretations, persuading readers, justifying procedures, and "breaking down complex problems into simpler ones in problem-solving situations" (Donald, 2002:64).

Logical idea-developing skills are important too, as there are many different approaches to explaining a result of engineering. With the result, we should prove and argue strongly that the approach used is the most appropriate one related to resources and efficiency. There are not right or wrong answers, but just strong or weak answers. So we need to find out strong answers and argue why they are right (US-6P).

People will interpret the measured phenomena differently. So explaining the reason why I think the result should be that way is as important as the result itself... When we get a result, there are so many related things. We usually cannot make things clear by presenting clear causes and effects in the experiment. In such cases, I need to make my own arguments and persuade others logically, regarding why it happens and what process is involved and so which results support my reasoning (US-8P).

While I study, I think of how important it is to divide problems logically and how to solve them systematically. Even if English is lacking, some may have excellent skills in developing ideas logically; in that case, logic compensates for the lack of English (US-5P).

Numerous careful tactics and conventions such as structuring ideas well, clear theoretical derivation, clear methodological display, clear connections and transitions, effective paraphrasing and wording, avoiding repetition, appropriate summarizing, conclusion-drawing and coherence were valued in writing papers.

> The most difficult part of writing is to decide how I make structuring and where I put my main ideas, how I justify why my main idea is good compared with other papers, short and clear theoretical derivation, and eye-catching with clear experimental display. In the first case of writing a paper, it was hard, but afterwards it became habitual work (US-16PD).

> We must paraphrase, avoid repetition, and change words by searching the thesaurus, supporting my own argument. When I wrote a paper, my supervisor tended to point out that I used too much repetition and he deleted many parts (US-13P).

> Summarising and paraphrasing are also very difficult for me (US-6P).

> The conclusions should also be short, including the results and key points of the whole paper. After a short argument, I should write the reasons why I think like that. If I only suggest problems and I do not clarify with solutions and explanations, it is not a good piece of writing (US-16PD).

In contrast, outlining chapters and heading titles and subtitles were perceived as standardized in engineering; each chapter also requires proper connections, with clear sign-posting, and the expected contents within chapters.

> Chapter outlining is mostly standardized, so not so important. How connections and transitions between chapters are made natural is important, but people cannot do it very well. Logical presentation is important, but the heading selection is not so important (US-16PD).

ULs expected students to publish at least three papers in journals during the Ph.D. programmes.

> We hope that students will have several papers published by the time they finish their Ph.D... At the very least, they should have three papers (UL-5).

For preparation of their *Ph.D. theses*, students require highly sophisticated writing skills in presenting their results at the end of the courses, in order to demonstrate that they are qualified researchers.

> Students can make reasonable progress without perfect English, but will not achieve publication or ultimately their Ph.D., without attaining a high level of English. In the preparation and defence of theses, English is critical (UL-4).

In addition, ULs foresaw that students' writing skills would be crucial for their careers after graduation, because employers look for evidence of students'

education. In these cases, it is important for students to demonstrate and make clear the research findings by writing technical as well as non-technical reports. Writing and presenting their research is more important than the research itself.

> I am well aware of the importance of teaching transferable skills to students, as after several years of education at IC, employers look for evidence of students' writing and presentation skills. It doesn't matter how wonderful the research you've done. If you don't explain it in writing, if the managing director cannot understand the title and abstract, then it's a failure as an exercise. Employers say your students have got to write, have got to able to write technical reports to specialists as well as non-technical report for newspapers or 'Scientific American' magazine, etc (UL-5).

UL-1 suggested that Ph.D. students should provide their own interpretations in writing by using their own words and the first personal pronoun, 'I,' rather than merely reproducing others' work.

> While for undergraduates, reading and citing books and work which people have done are important, if you come to Ph.D., it is important to put their work into their own words, for example, *I* have done such and such an experiment and the outcome of the experiment is X, Y, and Z. That is, writing an article, writing their own ideas are important (UL-1).

In Korea, although writing papers was considered as pivotal, students were expected to acquire writing skills on their own and they delayed learning writing skills until they had to write theses. In the UK, students perceived writing papers as a composite process including a sound understanding of subject knowledge, aims, target readers, tactics and conventions of writing in the discipline. ULs recognized the importance of training students in extensive writing skills needed for their future careers as finding a voice through writing is part of becoming a member of the community of practice.

7.2.2.4. Reading and Surveying Literature

At College K

Catching up with recent global research trends, searching for useful information related to students' own research topics, comprehending the key concepts,

understanding specific terminologies and producing students' written and spoken texts are fundamental practices in reading the literature. Although most KSs may be fairly accustomed to reading texts from their undergraduate courses, they perceived that they are still in need of speed reading, learning how to grasp the main points and analysing existing texts.

> Reading is the basic main skill in analysing written materials, and producing the written and oral presentation of researchers' own work. Speedy reading accelerates the efficiency of research... Reading is important to understand and follow up recent research trends, and to understand clearly the main points of other researchers' study (KS-8P).

> Reading is the prior way to obtain a lot of information from academic literature in the domestic area. All engineering subject materials such as papers, articles, journals are written in English. (KS-7P).

KLs emphasized that students' individual understanding and gaining knowledge through reading texts were important in engineering.

> It is crucially important to have knowledge of other researchers' findings and information of the fields before students do their own research. Studying engineering needs more personal understanding (KL-12).

At College U

Efficient reading was also a key issue for USs, because it can directly lead to efficiency of research.

> If we can read quickly, then we can work efficiently, and if we can write quickly, we can finish our work faster. So having proper reading and writing skills is very economical (US-5P).

They were concerned about understanding the contents through repetitive reading, and identifying the *right* literature in relation to their own research among thousands of references.

> Reading is also difficult. I read papers over and over again, not because of English, but to understand the contents (US-13P).
>
> The literature survey was difficult for the first time, as I couldn't catch the meaning of subject terms quickly. Generally there is too much information, and searching for the right material is often hard. (US-16PD).

ULs reiterated that reading the work of previous researchers was essential throughout the whole research process, particularly for Ph.D. students. Amongst a range of academic literature, students have to select effectively which texts they will read or reject, and then decide their future research approaches according to their reading. Much time is required to read and think about the relationships between previous studies and students' current study in engineering.

> What really matters is their reading, top priority. Students will get most of what they know, I guess, through reading lecture notes and books and work examples. English is pretty critical there... I am particularly talking about Ph.D. students, which matters most. M.Sc. students are the same as UG students as far as communications are concerned. For Ph.D. students, reading is absolutely essential all the time. Making decisions is based on that reading, certainly what to read and what not to read, drawing stuff out about what other people have already done and deciding what to do (UL-2).

Once students are able to comprehend texts, students may acquire knowledge in the area of study.

> If you're acquiring knowledge, you need to be able to read the notes which you're given, textbooks, and the other things. If you could do this, if you could listen and understand and read and understand, then you're going to learn something. You're going to acquire the knowledge you are trying to acquire (UL-2).

Thus reading is considered a basic productive process to expand the conceptual understanding required for students' research in both contexts.

7.2.2.5. Supervision

At College K

One-to-one supervision did not raise crucial issues for Korean students in Korea, as students and lecturers mostly communicate in their mother tongue. This view is supported by the questionnaire data (section 7.2.1). However, with foreign students supervision is held in English, and English will become more important during supervision, because the number of foreign students is increasing in Korea (Chapters 2 & 5).

> When I meet my Korean students personally for supervision, I don't speak English. But I have other foreign students. For example, I have at the moment a Russian post doc student in my laboratory and in the past I had a Polish student. In that case, there is no other tool for communication except English (KL-1).

We see here the effect of globalization in the Korean academic context; English is a unique medium of communication among people from diverse nations sharing specific communicative purposes (cf. section 3.2).

At College U

USs, in contrast, emphasized the importance of supervision as the *major* practice for Ph.D. students in the UK educational system, because supervisors are the only people who can offer research topics and direct support for students' study. Appropriate communication which involves clear and precise idea exchange with supervisors was perceived as pivotal for students' academic success.

> When we have a meeting with a supervisor, we need to speak the ideas clearly; we need to make the supervisor understand our ideas first. Then, the supervisor gives some comments, suggestions, resources and any kind of help afterwards (US-4P).

> I need to understand precisely and clearly topics we are discussing with my supervisor... We always need to adjust our English level to supervisors. The English used to manage the relationship with them is different. At that level, how much one can use English is not an issue, but how much one can communicate with supervisors and maintain a good relationship is very important (US-11P).

Supervisors tended to be seen as authoritative and powerful beings who can directly influence the outcomes of students' study. Therefore, to maintain *harmonious relationships* with supervisors who have a different language and culture is a critical issue for students.

> The relationship with supervisor is a crucial factor. If the relationship is OK, he is able to research well because his supervisor tends to offer more suggestions. If the relationship with the supervisor is not good, although he is bright, he tends to have conflicts with his supervisor (US-5P).

> Some students suffer a lot and have great difficulties in doing projects, only because they do not have a good relationship with their supervisors.... When students cannot communicate

> fluently with supervisors, there are more chances for an uneasy relationship. So it is basic and essential to be able to speak in English without difficulty, although it does not mean one must be fluent and perfect in English... A student was not in harmony with his supervisor, and in the end, it took one and half years to correct his thesis after the viva, because they could not agree and unify ideas (US-11P).

It is important for students to have clear ideas about what they are researching, because students need to *negotiate* with supervisors about the direction which their research should take.

> In some cases, supervisors lead students to go to the direction which is interesting to supervisors themselves, rather than to the desirable direction for students' papers. So students must have their own clear ideas for their research, and compromise their ideas with the supervisor's needs (US-5P).

The lack of oral/aural skills tends to make students embarrassed in communication. They sometimes do not understand what supervisors say, and experience communication breakdown.

> I feel stupid and find it hard because of English deficiencies. English is a significant obstacle for me, especially in listening when I discuss results with my supervisor. I only understand 70-80% of his comments and approximate the others by myself. Sometimes I misunderstand some words and the supervisor corrects them again (US-12P).

Given that supervision is vital for students' academic development, ULs expected students not only to have *precise comprehension* of what supervisors are saying, but also *to negotiate* and *debate* with supervisors during supervision.

> Throughout one-to-one contact with a supervisor, which is almost all speaking and listening, the most frustrating thing with students is, I think, talking to them one-to-one at Ph.D. level. Then they agree to do something but they haven't actually understood, so they go and do it and they don't say that they don't understand (UL-2).

> For Ph.D., oral skills, when they see the supervisor, they need to understand what the supervisor is saying. Development of these skills, with listening and comprehension as well as being able to debate, are important skills for Ph.D. students (UL-1).

Thus in the UK supervision was understood to require appropriate communication, smooth relationships and negotiation between students and lecturers. These needs

are also crucially related to the sociocultural issues which are discussed in Chapter 8.

7.2.3. Summary

In general, the interview results were congruent with the questionnaire data regarding the importance of study skills in academic practices in the UK and Korea. KSs and KLs recognized the contemporary demands for students to participate in more academic practices with more competent study skills in English than earlier in the Korean academic context. KLs were particularly worried about students' lack of oral presentation skills and the skills of theses writing, and attributed these defects to students' lack of logical thinking tools, poor English education and reluctance to present their arguments. Although KLs corrected mistakes in students' writing and speaking, KSs were expected to deal with these academic practices mostly by themselves.

USs and ULs commented on the high standards which are expected in writing theses and oral presentation skills, and these two skills were almost equally valued in the engineering discipline at College U. ULs pointed out the roles of training in these skills, to enable students to communicate in the global community of practice, and the importance of poster presentations as a new visual modality. Supervision is also emphasized in the UK as requiring appropriate communication skills, precise understanding, negotiation and harmonious relationships between students and supervisors. Working from these major findings concerning language skills and study skills in both academic contexts, I will proceed to address emerging issues.

7.3. Discussion

First, we should note that participants were often not able to separate each language skill, but they highlighted the need for the integration and balance of language skills in academic practices both in Korea and the UK. Within engineering, the lack of

any one language skill may have serious consequences for students when they perform academic practices in their community. For example, in the UK context the demands upon Ph.D. students for oral presentations of their ideas were quite remarkable and almost as important as writing papers. Those demands are greater than in humanities or social science subjects where, even if their spoken English is not good, students can rely more upon reading and writing papers.

Additionally, many participants in both contexts emphasized the inseparable relationship of reading and writing skills. This is probably because these skills constantly interact together in text processing (Johns, 1997:12), and the reading of source texts in the appropriate genres carefully and extensively provides resources, and promotes the modelling and recognition of typical features in the discipline (Reid, 1988 in Flowerdew & Peacock, 2001). Shaw (1991) demonstrated that this composing process was most frequently used by science and technology postgraduate overseas students at Newcastle University in the UK. Academic writing processes may include a creative organization of authors' ideas through reading related models in a range of genres, as well as a process of creating and discovering meaning (Zamel, 1982). Therefore it is beneficial if engineering students are supported through EAP programmes by knowledge of genres, structures, rhetoric, registers and conventions of writing in their discipline.

We may conclude that it is unsatisfactory to instruct students in reading or listening skills separately in the way that students have been taught traditionally (see section 2.3); they should be able to adopt all language skills collaboratively and competently when studying in the discipline (Benson, 1989; Canagarajah, 2006; Coleman, 1991). As Hinkel (2006:113) states, language learning now seems to place "an increased value on integrated and dynamic multi-skills" "to increase learners' opportunities for L2 purposeful communication, interaction, real-life language use, and diverse types of contexualized discourse" (p.114). Students need to employ *multi-skills* as essential components for meaningful communication throughout their academic lives in the era of globalization (cf. section 4.2.2).

At the same time, while each language skill is essential, a different emphasis at

different stages of students' academic progression should be made over the long academic training period. Postgraduate students seem to require reading as a precedent activity, to gain information; they then need listening and speaking to discuss and negotiate interactively in supervision or seminars, and later they need writing for assessment. This sequence is different from the conventional language teaching or audio-lingual approach, in which the progressive pattern is listening, speaking, reading and writing (Benson, 1989).

Furthermore, a great number of respondents indicated that 'good' language skills and study skills depend on a clear understanding of contents and conventions of engineering. For example, proficiency in study skills such as those needed for oral presentations and writing papers is premised on acquiring an understanding of disciplinary knowledge by reading much relevant literature. Other skills, such as the logical development of ideas, reading and searching for useful information and establishing research directions, are all fundamentally grounded on solid engineering knowledge and conventions. [This is congruent with the data in section 6.2.4.] The questionnaire data also show that both students and lecturers were well aware of the importance of specific academic writing skills in the discipline, which differ from those used in their daily lives. These examples clearly indicate that for engineers the use of literacy in English is incorporated with the knowledge and epistemology of the discipline.

Although students considered that the competent use of skills simply depends on the acquisition of skills and disciplinary conventions, lecturers in the UK argued that students need to negotiate and debate with lecturers and that students should use their own words, 'find a voice,' and express their own ideas, rather than simply adopt strict rules and conventions. Lecturers seem to suggest that students should participate in existing dominant practices, and should challenge and negotiate conventions in the context (Lillis, 2006). This indicates that postgraduate students are required to acquire 'academic literacies,' rather than transferable 'atomized skills' or 'socialization' (Lea & Street, 2000; section 4.2.2). The acquisition of academic literacy will obviously promote improved communicative practices for postgraduate students within their field.

Moreover, participants in different sociocultural contexts have differing preferences in relation to skills. For example, ULs stressed general communication skills and English pronunciation and grammar, while KLs were more concerned about specific skills such as oral presentation, technical writing and the use of English for the particular discourses of engineering. These preferences seem to reflect different views on the functions of English and skills between the two contexts. In the UK, English and skills were perceived as being more important for social interactions and communication in the classroom. Moreover, lecturers in the UK were significantly concerned about Korean students' lack of general communicative competence. In Korea, skills in English were more important for instrumental purposes and effectiveness in accomplishing academic tasks, while social interaction was still a secondary issue for Korean academics. However, to be a proper engineer in the global community, students should be equipped with both general communication skills as well as specific literacy for engineering (cf. section 4.4). This is especially true because engineering, a communication-based discipline, requires students to communicate with a variety of people in real-life situations (cf. section 3.7.1). Therefore, students may require *flexible* combinations of both general and specific skills within the continuum of EAP programmes (see Figure 3.1. in section 3.7), depending on needs of learners in the situated context of engineering.

Both in the UK and Korea, students commonly participate in various academic practices, such as participating in lectures, presenting at conferences, writing research articles and reading academic textbooks. Whereas, in Korea most students manage study skills for supervision, practicals and written and oral examinations in Korean, students in the UK have to deal with these skills in English, resulting in additional effort and problems. Whether a study skill is problematic or not may be dependant on which language is used in the practices (see Table 7.2.1). Although Carkin (2005:92) stated that academic success largely depends on L2 students' negotiation of lectures, textbooks and research articles, this study showed that there are more extensive and complex requirements for engineering students' academic success, including the ability to make oral presentations and to benefit from

supervision as academic practices. These findings indicate that the requirements for postgraduate engineering students are expanding, encompassing more spoken practices in the engineering community.

During *lectures*, competence in understanding and listening were the first priority, according to lecturers in Korea and the UK. Such competence was considered more important than note-taking, a view which agrees with Ferris and Tagg (1996b). Benson (1989:436) also showed that note-taking skills isolated from the study tasks cannot guarantee learning in lectures. Although in previous years note-taking in lectures was more important than understanding lectures and questions raised by colleagues (Zughoul & Hussein, 1985), nowadays students are often given handouts for the lectures at the beginning of the courses, and note-taking skills seem to be less in demand.

ULs particularly emphasized the need for students' active participation and interaction in the lectures, exemplified by asking additional questions. ULs believed that explaining the real value of knowledge in lectures is central to their work as lecturers. ULs seem to consider that knowledge is socially constructed and is shared by a dialogic activity of participating in lectures in the UK classroom. On the other hand, Korean participants tend to have different cultural orientations to learning (Jin & Cortazzi, 1998); that is, they were focused more on listening to lectures and individual study. [I will discuss this issue more in Chapter 8.]

Recently, as a large number of lectures are given in English due to the globalization policy at universities in Korea (see Chapters 2 & 5), students seemed to be embarrassed and lecturers were concerned about demands on students' comprehension skills when they listened to complex technical contents in English during lectures. Students are thus expected to have the necessary strategies for lecture comprehension in English, such as the ability to understand the main purpose of the lecture, appropriate turn-taking skills in questioning and answering (Richards, 1983 in Flowerdew, 1994:11) and identification of discourse markers usual in lectures.

Although *specific terminology* is considered as the major tool which defines each disciplinary culture (Flowerdew & Miller, 1995:366), the questionnaire data in this study gave it only average importance, probably because participants in this study had already gone through several years of study and they may not have serious difficulties in understanding key subject terminologies. In the interview, however, some students (mostly M.Sc. students) commented that they struggle because they lack enough resources or references which explain new specific terms, and lectures are their only source for gaining knowledge of these terms. In this regard, participation in lectures is very valuable. In addition, corpus studies on technical and sub-technical terms of engineering may provide useful resources for students when learning specific terminology (Mudraya, 2006).

The participants advocated various skills as useful for *reading the literature,* such as skimming and scanning for efficiency and speed in extracting key points, constructing meanings from background knowledge, searching and selecting literature relevant to producing students' own research design, and repetitive reading to understand concepts in engineering. Although some students believed that they were used to reading texts through long periods of study, reading is still a very demanding practice. This is because students read to perform academic tasks (Donald, 2002), not only for pleasure. Although students understand subject terms, they sometimes may not understand examples in texts which have strong cultural connotations (see section 8.2.1.5), because readers may interpret texts differently when negotiating meanings in different social settings (Parry, 1996; Wallace, 2003:7). Reading and understanding may also take time. That is, at the beginning, students normally read superficially with partial understanding. As they gain more subject knowledge through reading widely with appropriate influences such as supervisors' comments, their understanding becomes clearer. Despite the difficulty in reading the literature, students are often not trained in reading strategies for disciplinary contents (Nuttall, 1996 in Flowerdew & Peacock, 2001). Students may require systematic reading instruction for their discipline.

In addition, lecturers in both contexts pointed out in questionnaires the importance

of reading various types of graphs, diagrams and charts as the distinctive genres of engineering. This emphasis agrees with Hyland and Bondi (2006). Identifying and grasping the main points quickly from the figures may be one of the indispensable skills in reading texts in engineering (Pritchard & Nasr, 2004). This practice may be relevant to how to represent students' own designs and physical models in diagrams and figures, which is a central task for engineers (Donald, 2002).

For Ph.D. candidates, *supervision* was the major practice in the UK educational system. While many students considered supervisors as powerful and authoritative beings who can determine their academic success, UL-2 and US-5p did not see supervision as just directing or guiding students in the directions which supervisors want; supervision was considered to be a process of interaction between students and supervisors including negotiation, debate, answering, and explaining. Leki (2006:148) similarly stated that supervision is "a part of the learning process to negotiate the socio-academic relationship" in America. Korean students may need to understand the process of supervision in different ways and to take more initiatives in the relationships and negotiation with supervisors in the UK. On the other hand, most supervision is conducted in Korean in Korea, similar to the situations between Cantonese-speaking academic staff and students in Hong Kong (Flowerdew *et al.,* 1998). However, if more foreign lecturers and students come to Korea, more supervision will be offered in English.

In particular, for engineering Ph.D. students, as "junior members" (e-mail communication with UL-5, in August 2007) of the global academic community, the skills of presenting their own work and findings to the international conferences and journals are inevitably emphasized, because students are eagerly expected to join the global community whether in the UK or Korea. As "public behaviours" (Coleman, 1991:17), the use of these skills is anticipated to conform to the norms of the global academic community. Although students mostly remain in their local contexts, all courses in these contexts are considered as training them to go further, to participate in the global community of practice. Throughout students' postgraduate courses, writing and speaking practices in the global forum not only accelerate the formulation of their engineering ideas, but also offer opportunities to

glimpse the expectations of the global community.

For this reason, nowadays, students in Korea are strongly required to *present* their ideas and research at international meetings and conferences. However, students may face enormous challenges to their English competence and oral presentation skills. Moreover, the mainstream academic culture in Korea does not positively enable students to present their findings and arguments clearly and logically at seminars or conferences. The academic culture in Korea tends to place value upon listening rather than presenting ideas, and students express their findings reluctantly at conferences compared to those from other nations (section 8.2.1.1). This may result in serious disadvantages for their research careers, because engineers from different countries may misunderstand the reluctant behaviour of Korean students due to a lack of knowledge in their research. [I will discuss sociocultural issues more in Chapter 8.] In addition, students have limited time to practise oral presentation skills. Therefore students need to be offered more opportunities and space to exercise oral presentation skills and become acquainted with international expectations during their academic years. Such skills include the use of appropriate tactics such as emphasizing key points and providing clear expressions with a confident attitude.

In particular, *poster presentation* is a new kind of genre and a new modality, using different drawings, visuals, diagrams and other resources in the UK. [An example of a poster is shown in Appendix X.] "A current preference for the new modalities" emphasizes "multimodality and the increasing importance of visual literacy and the new technologies, which involve different, non-linear ways, of drawing from text" (Wallace, 2003:8). Even if Korean students are not confident in English, they can use a particular mode of presenting information at poster presentation, which includes all kinds of textual possibilities within new or old technologies.

Students and lecturers perceived that *writing* demands solid logical thinking and clear explanations of problem-solving processes for global publications in the disciplinary community which agrees with Donald (2002), but discipline-specific writing skills have seldom been taught in Korea (section 5.2.1). Students often

seemed to be ignorant of the importance of writing skills until graduation. This situation is similar to those identified by Dong (1998), Jenkins *et al.* (1993:61) and Casanave and Hubbard (1992), who found that writing becomes most important as graduate students approach the end of their education in the United States science and technology settings. Even though KLs were worried that students' writing ability was far behind international standards, there seems to have been very little effort by the faculty in Korea to require students to write regularly, just as Jenkins *et al.* (1993) and Braine (2001a) noted for graduate engineering students in the United States and Hong Kong respectively. KLs even expected students to manage the writing dilemmas by themselves. In my view, students' lack of writing skills may in part come from the lack of opportunities to think and to practise developing ideas logically in their disciplinary context. An engineering lecturer at a university in the United States comments that:

> They [students] have to be able to think constructively... judge how competent they are at problem solving and... understand... This is really hard, because (a) the students do not want to, (b) they are not experienced, and (c) their life experience up until now has told them: "Don't think, it's inefficient and you might not get the same marks, you may make mistakes" (Donald, 2002:74)

Having seen the need to meet the requirements of the short-term tasks such as taking examinations or extracting experimental results, Korean students have had little chance and time in which to acquire writing skills in the particular discourse of engineering. Therefore appropriate training for students to think logically and develop discipline-specific writing skills is necessary. EAP programmes can stimulate students in engineering to accommodate the crucial imperatives of thinking and writing logically. This would be extremely beneficial in helping students to accomplish academic tasks and be empowered in the academic community.

By contrast, at College U L2 students were forced to attain certain writing scores in formal examinations in English before entering engineering courses, and to take EAP writing support programmes to facilitate writing skills for their discipline during postgraduate courses (section 5.1.2). Additionally, USs had more chances to

write in various academic genres such as reports, articles, theses and examination papers. Therefore they seemed to have a clearer understanding than KSs of features of disciplinary discourse such as logical statements of ideas and connections, and the need to consider target readers and conventions in academic writing. ULs also emphasized that expressing research findings and ideas with effective communication skills is more important than the findings themselves, and posited the improvement of writing as a training process enabling students to be qualified researchers in the community of practices. Writing skills were considered as a part of the engineering discipline. The educational provision for training in writing skills described by ULs and USs certainly has implications for writing instruction at universities in Korea.

The questionnaire data have shown that participants in the UK considered *avoiding plagiarism* as an important skill in writing, whereas participants in Korea were only slightly concerned about this (Table 7.2.2.7). In the UK, Ph.D. students are expected to use their own words and interpretations in writing. There seem to be different expectations concerning the achievement of knowledge, the ownership of texts and originality (Bloor & Bloor, 1991) between the two engineering settings. Plagiarism is a frequently occurring cultural problem (Flowerdew & Peacock, 2001:21). Many instructors in engineering in the United States have tended to perceive that non-native students' writings are heavily plagiarized 'cut and paste jobs' (Braine, 2001b; Dong 1998). However, the notion of plagiarism is still a contentious and 'multi-layered phenomenon' (Sutherland-Smith, 2005), and Pennycook (1996) argued that culturally different understandings of textual ownership and language learning in Western and Chinese contexts need to be considered, rather than dogmatic accusations of non-native students' writing practices. Nonetheless, it is important for Korean students to be consciously aware of the expectations of acknowledging with citation the sources of ideas, theory and technical terms and the designers of the experiments, inventions and equipment, to avoid being accused of any intentional or unintentional plagiarism.

The discussion so far has shown that engineering lecturers and students both in Korea and the UK by and large share numerous points of *similarity* in their

perceptions of the skills needs in English of engineering students. In contrast to earlier times, schools and society now encourage Korean students not to remain in domestic settings, but to interact with foreign engineers and participate in global academic practices. Although some actual practices of the academic culture and pedagogy may still largely remain in the Korean tradition (Chapter 8), globalization has enormously changed the current academic circumstances, demanding more interactions and communicative skills to enable participation in the global forums of the engineering community. This change has rapidly transformed engineering academics' perceptions about the needs for sophisticated and diverse skills in English, in sensitising themselves to the international expectations of the engineering academic community. The traditional dichotomous view of EAP programmes based on geographical ESL and EFL contexts is fast eroding (cf. section 3.5). Therefore the current changing academic situation of globalization has significant implications for the renovation of EAP programmes in Korean universities to include multi-skills approaches and discipline-specific literacy.

Nonetheless, it should not be neglected that there are still *different* academic expectations and emphases on skills, depending on views of the functions of skills in English, academic practices and educational values in the two contexts. For example, while English is strongly valued for interactive practices in the UK classroom, English skills are important for academic performance in Korea. Supervisions and written and oral examinations in English are major practices for Ph.D. students in the UK, whereas for students in Korea and M.Sc. students in the UK lecture participation is a requisite. These differences indicate that while all language skills and some study skills are commonly used in both academic settings, cultural orientations and expectations in using these skills are different depending on the context (see Chapter 8).

Finally, in Korea, facing the current distinctive and urgent needs to manage the daunting tasks imposed by the local and global practices in the community, students seemed to struggle due to their lack of necessary skills and strategies in English. Most students regretted their limited chances to acquire any formal and informal speaking, writing and listening skills, and ardently sought for more time to practice

these skills in or outside English classes. Subject lecturers also acknowledged that students' language difficulties were beyond the expertise of lecturers to rectify, urging students to find ways to fulfil academic tasks in English by themselves or by seeking special help from English teachers. Well-organized EAP programmes focusing on multi-skills instruction and including discipline-specific literacy and conventions may provide students with better preparation for participating in academic practices in the community. If students plan to study in the UK or English speaking countries, EAP programmes in Korea should provide instruction of the appropriate study skills in English for supervision, written/oral exams and practicals which enables students to meet effectively the new situations and limit any frustrations.

In this chapter I have made use of data on engineering participants' perceptions regarding Korean engineering students' needs in language skills and study skills. Participants in both contexts have shared perceptions of the needs for multi-language skills and study skills integrated with engineering disciplinary knowledge and conventions, although the emphasis and expectations of using those skills vary depending on the situated contexts. As the successful learning of and orientation to communicative skills are essentially linked to the sociocultural expectations of the context, I will discuss the sociocultural dilemmas of students' behaviours in the academic practices of engineering in Korea and the UK in the following Chapter 8.

Chapter 8.

Sociocultural Behaviours in Engineering

Globalization has led the expectations of academics to be "closely aligned with the international norm" (Hyland & Hamp-Lyons, 2002:4). This signals difficulties due to sociocultural problems in relation to academic behaviours among individuals in local contexts within the global academic community. The aim of this chapter is to discuss the perceived needs of Korean postgraduate engineering students, concerning sociocultural behaviours in the "sociocultural practices" (Lave & Wenger, 1991:29) of the engineering discipline, and the reasons for these perceptions in the UK and Korean contexts (research question 3). I will first draw on data collected from questionnaires and interviews concerning the issues of sociocultural behaviours, and then discuss the emerging issues in the global academic community.

8.1. Sociocultural Experiences: Questionnaire Results

Open-ended questions 9 and 10 of section C in the questionnaire (Appendices II-V) asked participants about the perceived sociocultural differences between students' own academic culture and the expectations of the international engineering community and problems which arose from these differences.

At College K

Sixty-four (41%) KSs responded about cross-cultural differences (question 9). The responses are categorized as related to *study approach (32)*, *the way of thinking (17)*, *expressions in writing and speaking (8)*, *value system (3)*, *social relationships (2)* and *others (2)*. Conversely, forty-eight students (30.8%) commented that they did not reckon cultural differences as being significant, and forty-four (28.2%) students just left a blank. In question 10, forty-five (28.8%) KSs replied that they had experienced

sociocultural problems in managing academic practices in English. Their problems concerned *understanding and using rhetorical expressions in English (14), waste of time and inefficiency (12), no room for creative thinking (5), the lack of discussion and questioning (5), different research approaches (4), weakness in developing and presenting one's own argument (3)* and *others (2).* Sixteen KSs (10.3%) wrote 'None,' 'Nothing particular,' or 'I don't know.' The majority of KSs (95, 60.9%) left blanks.

Thirteen KLs (38.2%) described sociocultural differences such as those concerning *study approach* (6), *the mode of lecturing* (3), *institutional systems* (2) and *the way of thinking* (2). Eleven participants (32.4%) wrote 'None,' 'Not at all' or 'Not serious.' They explained their reasons for replying no: students mainly do not deal with sociocultural phenomena; mathematical and physical phenomena and the disciplinary culture of engineering are similar worldwide; or simply they did not know about the meanings of academic culture. Ten KLs (29.4%) left blanks. Seventeen KLs (50%) described sociocultural problems such as *difficulties in writing and reading the thesis by using appropriate rhetoric in English* (5), *non-participatory attitude and reluctance to ask for help in classes or activities* (4), *lack of questions and discussion* (4), *lack of logical thinking and explanations when sorting out research topics or findings* (3), *superficial subject knowledge in the local context* (1) and others (1). Eight lecturers wrote 'None' (23.5%), and nine participants left blanks (26.5%).

At College U

Six out of 16 USs (37.5%) indicated that they experienced sociocultural differences concerning *teachers' attitudes in the classroom, class sizes, personal relationships, value systems* and *the ways of thinking.* Nine students (56.3%) at College U wrote 'None' or 'Nothing particular', and one US (6.25%) left blanks. Four USs (25%) noted problems arising from *different study approaches, relationships with supervisors, too much questioning by students of other nationalities during the class,* and *the non-punctuality of lecturers.* Nine USs (56.3%) replied 'No,' 'Not applicable,' or 'Not serious,' and three students left blanks (18.8%). Six ULs out of

15 questionnaire participants (40%) commented on cross-cultural differences such as those in *academic approach, interpersonal relationships, presentation or group work* and *students' attitudes*. Five lecturers (33.3%) replied 'Not at all' or 'None,' and four (28.6%) left blanks. In addition, four (26.7%) noted sociocultural problems regarding *students' reluctance to ask for clarification and questioning (2), their non-participatory attitude* and *relationships with supervisors.* Some lecturers (4, 26.7%) wrote 'None' or 'No problem,' and others (7, 46.7%) left blanks.

In the questionnaire survey, the rates of comments on the differences and problems for Korean engineering students regarding sociocultural behaviours were somewhat low (20-50%). A large number of participants replied that there were no difficulties and problems (10.3%-56.3%), or left blanks (6.25%-60.9%). These low response rates seem to indicate few perceptions about sociocultural needs on the part of engineering students and lecturers, partly because participants might conceive that academic culture and attitudes are similar worldwide, and that there was nothing seriously troublesome about sociocultural matters in engineering. Alternatively, it is feasible that the concepts of sociocultural needs were abstract for them or remote from their academic interests, questions 9 and 10 in the questionnaires were "too open-ended for the respondents to know what kind of information is being sought" (Cohen *et at.,* 2007:322), and they might not want to spare more time thinking about the issues. In the interviews, on the other hand, participants were involved in more in-depth discussions about sociocultural issues.

8.2. Needs related to Sociocultural Behaviours: Interview Results

Interviewees commented on Korean students' sociocultural dilemmas in terms of academic behaviours, study approaches, value systems and social relationships. [Comments from interview data on rhetorical expressions are not included in this section, not only because these are out of the scope of my research, but also because there were very few.] Some of them made suggestions about how to overcome the

dilemmas in their academic settings, and others replied that they did not have any severe difficulties with sociocultural matters when studying engineering.

During the discussion, the expectations of the international engineering community were mostly presented as Anglophone academic conventions. This is because these seem to be largely dominant in the current global engineering community (see Chapter 3), Korean students in the UK described their sociocultural problems in relation to the mainstream UK academic culture, and Korean participants in Korea tended to consider Anglophone academic conventions (especially academic culture in the United States) to be international (Chapter 2).

8.2.1. Perceived Sociocultural Difficulties

The following data demonstrate perceived sociocultural differences and problems of study behaviours for students in the UK and Korean academic contexts, according to the major themes which emerged from data analysis.

8.2.1.1. Reluctance to Present Arguments

At College K

KSs reported that they were reluctant to present their own research outcomes or arguments in the academic community, although they perceived that presenting these to international journals or conferences are crucial practices (cf. section 7.2.2.2). This is because in Korea they have been educated in an academic culture which encourages listening and deferential respect for others' ideas, rather than expressing themselves or criticizing others' ideas.

> In writing theses and presenting research findings, we are reluctant to convey our arguments with words or speech, because we have been brought up in a culture where listening rather than speaking is valued. We tend to study by just listening to lectures, accepting them and relying on individual study (KS-Q).

> While Western academic culture is knowledge-centred and students' ideas, suggestions and claims are valued, listening to others' opinions is more valued than stating our own arguments in Korea. Therefore Korean students tend to be weak in claiming our own ideas or in leading

discussion in front of others (KS-Q).

KLs reported that students' reluctance in expressing opinions is a *problem* over articulating their findings and ideas explicitly. This causes students' work to be improperly valued in the international community. In contrast, students within the internationally dominant 'Western culture' were perceived to express ideas confidently and plausibly. As most lecturers had studied in universities in the United States, lecturers often compared students' attitudes with the behaviours they encountered amongst people in the United States.

> Most students cannot present what they have done, although some students can do it very well. Most Korean students do not present and express themselves fully in front of others, due to introverted attitudes. On the other hand, Americans, in particular, are likely to display plausibly, even if they haven't done much. I attempt to instruct my students to convey at least 100% of what they have done (KL-13).

> In Oriental culture, it is valued not to present oneself, question and show one's idea. So Korean students do not want to come out with their findings. On the other hand, Americans are prone to present themselves and speak to others (KL-2).

At College U

USs seemed to face severe sociocultural conflicts between their internalised home academic culture and the UK mainstream academic culture, and they *struggled* to adapt to the academic culture in the UK.

> It is hard and takes time for me to adapt to the different culture. I studied in Korea until my UG level, while other students have studied in Britain from their early years. So it is not easy for me to overcome the gap (US-14M).

Although USs were aware of the expectations of active participation and explicit attitudes in the academic practices in the UK, they found it difficult to meet the expectations and often remained inactive and introverted.

> A lecturer expects students to take an active and constructive part in the classroom and in outside activities. However, we are not accustomed to express our own ideas and problems, since we have grown up in a different culture. We are sometimes considered as inactive and introverted students (US-12P).

However, some students had come to recognize that it was necessary to accommodate their behaviours, in order to be more active within the UK academic environment.

> In my first year of studying in England, my excessive politeness due to my habitual attitude stopped me from discussing any academic problems and difficulties, in an open way with my supervisor. But, later, I realised that a positive and active attitude, with self-confidence about overcoming the academic and sociocultural gaps, is needed (US-10PD).

In short, the Korean academic culture rooted in a more hierarchical society where listening is more valued (cf. section 8.2.1.4) seemed to prevent Korean students from presenting their arguments confidently in the community. Participants in Korea thus perceived that their home academic culture was problematic over enabling them to express ideas and receive proper credit in the global community. Korean students found it difficult to adapt to the expectations of active participation in the UK.

8.2.1.2. Lack of Questioning and Answering

At College K

KSs acknowledged that questioning and answering were important and difficult, for catching key points and providing clear explanations of the reasons for their points of view, especially with foreigners. Students tended to solve questions *alone,* by searching in books or listening to lectures.

> When discussing with foreigners, it is important to answer correctly following the questions and to catch the key points of others' speaking (KS-18P).

> When we have seminars in English, questioning and answering do not match each other and sometimes answers do not always address the question; we often lose our focuses (KS-2P).

> While, in the West, students are used to discussion and question and answer in one-to-one meeting or seminars, in Korea, we tend to solve problems alone, rely on lectures, thesis surveys, note-taking, memorization and a passive attitude, and rarely ask questions (KS-Q).

> Students have difficulties in questioning and answering, because Koreans are used to studying alone and understanding texts written on the basis of Western culture (KL-Q).

At College U

Although USs were aware that questioning and answering while constructing ideas are a part of the expected behaviours in the UK classroom settings, USs responded that if they had questions, they would go and search the internet or textbooks for more fast and accurate information. This is because they are not used to questioning during the middle of lecturers' speech, and internet communication is a well-developed way of sharing ideas among Koreans. USs seemed to resist the expectations in the UK class, and maintain their home academic culture.

> Students here seem to have studied by asking frequent questions to lecturers and colleagues and adding their own ideas to the answers from others. Lecturers are not annoyed by the trivial questions and reply to them very well. I agree that the UK academic culture, like asking and discussing in the class is a good way of learning, but as for me I am not used to questioning. I'd rather search on the Internet for an hour and I can have fast, precise and accurate information. Koreans tend to share information on the Internet well, but people from other countries do not tend to share their information so openly on the Internet (US-7P).

Moreover, USs observed that students of other nationalities ask questions frequently during the class, because they assume that questioning and sharing information may be helpful for other students and avoid wasting lecturers' time after class. However, USs considered that questioning lecturers with trivial questions during lectures may disturb others, wasting lecturers' and other students' valuable time. Therefore they said they would rather ask questions *after* class.

> In the UK, students ask even very trivial questions to lecturers in class. We don't understand the student's attitude because we think he or she can study that kind of trivial things at home alone or can ask personally to the lecturers later. He or she seems to think we should not waste lecturers' extra time outside the class, and should ask questions in class. But then he or she wastes other students' time and delays the whole process of the class anyway (US-6P).

On the other hand, ULs were *uncomfortable* with the Korean students' attitudes of avoiding questioning lecturers, during experiments or supervision. ULs normally expected students' additional comments and questions to clarify ambiguities, and accepted that replying to questions was a crucial aspect of their work as tutors. Lecturers considered that Korean students were unclear about whether they understood lecturers' instructions because they did not ask further questions. This

behaviour was considered as a critical obstacle for students' academic progress.

> Students are reluctant to ask questions when they do not understand. Students often say "yes", when they have not understood, even when requested to do something. I expect students to ask for clarification if necessary, not just sit there (UL-Q).

> I think the Korean student may indicate that he or she has understood something when in fact he or she has not. It is, I have found, important to explore through further questioning whether the student has in fact understood the point being made. I am not sure how to categorise this pride or embarrassment et cetera, and it can lead to serious problems with experimental work, such as broken apparatus and wrong samples analysed. It would be good if the student was comfortable saying "I don't understand" (UL-Q).

> The most important thing is to say that you don't understand. But they tend not to do it. I don't know why. I can guess why he is, but I need to be more proactive in making people to explain things to me, because we will, but they don't seem to ask for it... reluctance to ask questions... I am only here so that I can be asked questions and that's the most important thing you get from the tutor, to ask questions and get answers and understand them... Many seem to be polite. "No, I'm sorry. You haven't explained properly. I don't understand and please explain it again." That probably seems to be impolite. But that's what you have got to do... In every case, the thing I highlighted is this: reluctance to ask questions (UL-3).

> But British students many times say to me, "I don't understand anything." They are quite happy to acknowledge... As a teacher, you don't know how much they know. That is complete breakdown because they are not prepared to say what they don't know, even though they are good (UL-1).

KSs tended not to ask questions, as they were not used to this and found difficulties asking questions. This is probably because asking questions is an uncommon practice and may give rise to a possible loss of face in the Korean academic context. Students seemed to believe that asking questions is not essential because they can find solutions quickly and easily from texts. USs also attempted to find solutions through different sources such as searching the internet, reading texts, or asking questions after class, rather than asking lecturers in class. In contrast, ULs were frustrated by students' non-participatory and non-interactive attitudes and reluctance to ask questions in class. Therefore, there seemed to be a severe cultural crash between ULs and USs.

8.2.1.3. Lack of Discussion

At College K

KSs replied they had difficulties in discussion or debates because these practices required the correct use of English, appropriate rhetoric and the tactics of persuading, as well as solid subject knowledge. They regretted that they avoided discussion and were therefore *ruled out* from group discussion.

> It is hard to select appropriate words and expressions in discussion, because it may be impossible to persuade others with incorrect use of English. It is also difficult to express precisely the profound issues relevant to subject areas in English (KS-21M).

> While Western engineers interchange ideas with other researchers, I rarely do that (KS-Q).

> Korean people avoid presenting themselves, and are ruled out in discussion and debate (KS-Q).

Acknowledging that the dominant academic culture in the engineering community is rooted on discussion and interaction with others, KLs were concerned that students' tendency to avoid discussion caused serious problems. This attitude of Korean students may prevent them demonstrating their ideas and debating with foreign engineers in the competitive global markets.

> Western academic culture in the engineering area is more based on debate and discussion... although it also uses a lot of diagrams and graphs to display ideas and results. But our culture lacks these discussions and explaining what they know. So when Korean students go to international conferences, although they can speak English well, they have difficulties in taking part in debates due to their different culture and attitude. The result becomes a huge obstacle for our nation presenting ourselves in world markets (KL-9).

On the other hand, some KLs suggested that students should maintain their own academic culture in Korea. That is, although Western academic tradition seems to emphasize social interaction and discussion, Korean students can learn the particular written and spoken genres of engineering by reading internationally shared standard models from technical journals or listening at conferences. Some KLs seem to believe that developing cognitive understanding alone, rather than learning to manage general social interactions, is a useful approach for Korean students to cope with engineering tasks.

> Studying engineering needs more personal understanding than oral communication with others (KL-12).

> Korean students don't often seem to take part in socializing with other foreign colleagues. However, we can do well in our technical presentation, thesis writing, and comprehending somebody's work, although we do not do much socializing. Someone who does well in socializing is not necessarily likely to do well in technical work. It can be affected in some ways, but is little directly related. The attitude of studying alone and finding knowledge by getting stuck into books without asking others may not be helpful to develop English proficiency, but this does not mean that this attitude is directly related to English proficiency. It is necessary for students to read many good standard samples of technical writings and texts and write in a well-organized way, or practise by themselves. Socializing would help to improve how to express and speak and how to listen to somebody's thoughts. But I don't know how much it would (KL-1).

At College U

USs encountered much formal and informal group discussion and many seminars. They perceived these practices as unnatural and awkward, because they were unfamiliar with them, lacked confidence about their knowledge, and were afraid of providing incorrect answers (cf. section 8.2.1.5).

> Students here participate more in group discussion. We are very weak in presenting ourselves. As we are not used to it, we are often embarrassed. We tend to take an outsider's position in the class, not involved in the discussion, because we are not confident in our knowledge and we are not sure whether it is right or not, until someone tells us the answers are correct. We are afraid to fail and annoy others with wrong answers. (US-14M).

They were often not involved in discussions. They seemed to be emotionally distracted, or embarrassed by being forced to behave in the different academic culture.

> Sometimes my tutor forces all the students to gather to discuss without notice. Then I follow his direction, but European students and I feel annoyed by the tutor's attitude (US-6P).

> While I do experiments, I need to explain my research plan and discuss with my supervisor in the group seminar held once a week or sometimes daily. When I can't do it properly, I feel frustrated (US-12P).

The rigor of discussion in engineering was explained by US-7p, as follows:

> I take part in discussions with people from industrial business companies once a month here. The company usually offers a project, students take part in the related research, and we regularly discuss it. If I can't explain my arguments well or enter the debate at the right moment in the discussion, they wouldn't know and cannot judge clearly whether I have good knowledge and ideas (US-7P).

USs were not good at responding to others in discussion. They also perceived interrupting others' speech in the middle of discussion as very rude behaviour.

> Also in dialogue, although I know that the man is saying something wrong, I cannot disturb him in the middle of his speaking, but others do. It is problematic for me how to respond to others properly (US-14M).

Some USs, however, attempted to accommodate to the different academic culture in the UK with an open mind.

> I realised that a positive and active attitude, with confidence to overcome the academic and social cultural gaps, is needed... Although we have a cultural gap between Korea and England, we need to make our minds open to different cultures. I have heard that language is acquired rather than studied. To acquire English, therefore, we should be accustomed to English culture. In order to understand other cultures, I think we need to face up to different situations and cultures (US-10PD).

USs found that flexibility was necessary when they associated with colleagues of different nationalities.

> When I meet British friends, I behave like a British person. With Korean friends, I behave like a Korean. Depending on the situation, I think and behave differently. I feel closer with Koreans. I have close relationships with British people too, but they are more individual (US-13P).

On the other hand, ULs were seriously worried about students' reluctance to discuss and engage with supervisors and their avoidance of face-threatening situations. They suggested that students should take part in more oral communications and open discussion, sharing ideas about academic issues with supervisors or lecturers.

> What I want is simply for them to communicate, you know...What's more important is being

> able to sit down and exchange ideas with somebody, so it's really totally basic communication which is the most important thing.... It happens when you sit down and have a conversation. You say, "OK what are we going to do?" You can speak of a bit of research activity in the laboratory and say, "what are we going to do about it?" And I say, "I think you should do this, XYZ" and sitting where you are sitting say, "OK. We will do that" and then go away, and I will discover later that he or she hasn't understood what I actually asked for, but didn't simply say "I don't understand what you want me to do"... Reluctance to engage the academic tutors in discussion of subjects which they find difficult, because they're simply going to take notes and go away and study them... What happens to me is that they don't press me to find out what it was I wanted. [with emphasis] That is the problem, serious problem (UL-3).

> Lots of Korean students, certainly MA students, I found students often say, "Yes, I understood something," in order not to be embarrassed, when actually they haven't understood something. And that is so frustrating. Actually, that is not helpful to them and not helpful to me... The most frustrating thing with students is, I think, talking to them one-to-one at Ph.D. level, and then they agree to do something but they haven't actually understood, so they don't go and do it and they don't say that they don't understand (UL-2).

UL-1 also suggested that Korean students should acquire knowledge more actively, risking making mistakes, and not avoiding embarrassing situations in the uncontrollable situations which arise during group work and discussion. This is because engineering is based on problem-solving activities and students often need to find solutions in unexpected and uncontrollable situations.

> The attitude is important one... But, in order to learn, you've got to put yourself in that situation that is not controllable. So you can develop your personal learning. Learning will not happen in controllable environments. I think you have to allow for the possibility of being embarrassed. I found Korean students don't want to be embarrassed. I understand, but that is not common to other cultures. That is a cultural issue that I can see. They are not prepared to be embarrassed because embarrassment is not acceptable to their culture... I think Korean students are extremely polite. Sometimes, you don't know what they think. I don't want to embarrass anyone, but sometimes students need to learn by mistakes, but they are not prepared to accept mistakes, therefore they cannot learn. They learn outside and they go somewhere to learn (UL-1).

To overcome such sociocultural problems, some ULs recommended that students acquire the dominant academic culture in the UK, having more social gatherings with native colleagues outside the class rather than keeping company only with

Korean colleagues.

> There are some cultural problems and differences you are going to tackle sooner or later. If you come to England to study, not only are you going to study English but also to be exposed to cultural differences (UL-3).

> An important factor is the social group that the student belongs to, and the Korean student hangs out with other Korean students and presumably there is a temptation to speak in Korean outside of college. I recommend to the student that Korean students socialise with English students and even jokingly find themselves English girlfriends; that is, it will help if English is spoken and read outside of the college environment (UL-4).

> My experience is that remarkable progress in English can be made if the student is networking with English speaking students. One problem is that students, for example, can stick together in the lab and in the hall of residence or flat talking to each other in Korean. This is counterproductive in terms of learning language (UL-5).

UL-3 (English) even suggested that English teachers should be 'native' English speakers, because they would be more effective when dealing with 'English culture'.

> The only thing you have to make sure of is that the English teacher is English. You know, we don't suggest that other people can't speak English, but if you're going to tackle cultural issues as well, Koreans' teaching English would be less effective than an English person in teaching students English. So the problem is you need to have an English teacher who can speak Korean, I don't know how many of those there are, but if you have any intention to overcome language problems and cultural problems, you need to expose students to English culture (UL-3).

UL-1 (Spanish), on the other hand, attempted to be *flexible* with students from different cultural backgrounds, as he appreciated the cultural difficulties of Korean students. This is probably because he was, as he says, 'a foreign speaker' himself.

> I think it's a matter of experience. The more you are in this job, the better you are. I have learnt to understand more and more different cultures. I behave in slightly different fashions for different students. I learn that skill to treat them in different ways, because they are different. But it is important issue and you can create difficulty, but as long as the teacher is flexible enough to accommodate cultural differences, then there shouldn't be a problem. I am also a foreign speaker myself; therefore, I have greater appreciation of the difficulties students

go through. I learnt English as a second language (UL-1).

In short, KSs and KLs were worried about students' avoidance of discussion, which prevented them from participating in interactive practices of the global community, while other KLs believed that acquisition of knowledge and cognitive understanding through reading and writing by themselves is more important than discussion and social interactions. USs were often perplexed during discussion, whereas ULs were frustrated by students' tendency to withdraw from interactive and participatory discussion. Given the tensions regarding discussion, most ULs suggested accommodation to the UK academic culture, but one Spanish lecturer (UL-1) and USs (US-13P) attempted to be flexible in the multicultural settings believing that it was important to be prepared to treat students or colleagues from diverse nationalities differently.

8.2.1.4. Relationships between Lecturers and Students

At College K

KSs showed some discomfort with the vertical relationships between lecturers and students, which never allow students to challenge lecturers' ideas. They considered that these situations resulted in a lack of the development of logical ideas, and of creative thinking, and in a passive form of knowledge transfer.

> When students are troubled because their ideas are different from supervisors, we want to argue. However, there are some vertical relationships between supervisors and students here. We know that supervisors' knowledge and experience are much broader, but it may be unreasonable that we always need to just follow supervisors' ideas and remain in passivity. During the lectures, we rarely ask questions, because we are passive. On the other hand, in Western countries, the situation seems to be different (KS-6P).

> I feel that I lack creativity and ability to develop ideas logically, since we are used to the passivity and the hierarchical system of the Korean academic culture (KS-Q).

KL-2 and KSs also noted that Korean academic culture is centred upon highly positioned people, while American academic culture is centred on students' creativity and a fundamental knowledge base.

> If someone highly positioned says something unclear, it is regarded as a good attitude that students should guess and understand the hidden meaning without clarifying the ambiguity by further questions. In contrast, in American culture, lecturers would feel that they need to make learners understand by using clear and easy expressions. In that sense, there is a big cultural gap (KL-2).

> In Western culture, fundamental theory and creative and logical attitudes in studying engineering are highly significant. In Korea, authoritative knowledge transfer is prevalent (KS-Q).

At College U

USs pointed to the presence of informal and almost equal relationships with supervisors in the UK. While they treated supervisors with deference, British and other nationality students were seen to be informal, and even critical of supervisors. Classroom practices in Anglophone countries appear to share solidarity and informality in higher educational institutions (J. Jones, 1999).

> The relationship with the supervisor and students is more equal here. In Korea, when the supervisor comes to the room, we stand up as a courtesy, but here we behave like friends (US-12P).

> Lecturers are mostly polite to students and value students' ideas very much. Students' power seems stronger than in Korea (US-15M).

> People here seem to speak freely and critically, discuss what they want to say, and ask any questions, even to the supervisor, as far as academic matters are concerned. On the other hand, in Korea, people don't criticise others' ideas, because we think criticism is not good etiquette, especially to supervisors or seniors (US-11P).

However, some USs considered this informality and criticism of supervisors as odd practices.

> I have more difficulty in speaking to my supervisor than I do to friends. Although other native colleagues talk to the supervisor in a very rude manner, the supervisor does not seem to be annoyed. I know I need to have a closer relationship with my supervisor and make a special impression on him, because I have many competitors under only one supervisor, but I can't help it. This hesitation seems to be a serious drawback for me (US-2R).

On their part, ULs were annoyed by and worried about students' attitudes which led them to never challenge lecturers' instructions and to attempt to please lecturers too much.

> The main difficulty is in the teacher/pupil relationship. They treat the 'Professor' as always right, and will not challenge or argue on any statement. If they are worried, they do not come to ask; it is only later that the understanding is exposed, when a result depends on it. Fear of losing face, particularly in a group meeting, or of making anyone else lose face. Asking a question implies someone is at fault for not either explaining or understanding what is proposed (UL-Q).

> I think they want to appear to please the teacher too much. That is the problem, different from Chinese or Japanese... I don't think they learn because of that... The other extreme is British students who are stubborn with the wrong ideas. That is the worst thing. I don't like it. Some say "I am right, you are wrong." They insist on challenging me in public, with lack of respect. I would say that is worse than being polite. I am talking of two extremes. Most students fall into mediums. So their code of conduct is different; rules of conduct depending on nationality are different. In Korea, these are not a problem, because everybody behaves in the same way (UL-1).

UL-1 talked about the heterogeneity of the UK classroom compared to the homogeneity of the Korean context. He seemed to have stereotyped views of Korean culture and others.

In Korea, the existing hierarchical relationship was perceived as problematic, because it might disturb students' creative and independent thinking. By contrast, USs felt uncomfortable with the informal relationships with their supervisors, whereas ULs expected students to challenge and argue with them.

8.2.1.5. Different Study and Research Approaches

At College K

KL-8 noted the academically fragile, abstract and superficial foundations of engineering knowledge in Korea, because of the mismatch between the Western knowledge system and the historical and cultural background in Korea (cf. section 2.4).

> Most engineering knowledge has developed on the basis of modern Western civilization. 20th century scientific development had mostly arisen in Western countries. But we were separated from the development for a long time. As the academic cultures are different, our academic knowledge is somewhat vague and superficial. In order for us to know something clearly, that knowledge should be concrete and come from our own real situations. But, for now, our scientific academic basis is a bit weak (KL-8).

As a result, students were considered to be prone to study through memorization and the superficial application of mathematical formulae in Korea, rather than a reflective and creative way. Lecturers in Korea seemed to internalise negative views of their own knowledge and academic culture.

> Korean education tends to implant knowledge in students, rather than to let them discuss and to arrive at their own conclusion. Mathematics and science education focus on memorizing final equations and formula, applying them in situations and solving problems. Accordingly, students do not have any intention to investigate whether it is appropriate to apply the formula in each situation or not. On the other hand, Western academic culture focuses on understanding the principles through a lot of reading and on extensive application to other areas (KL-Q).

> While Western culture is focused on wide reading, the exemplary application of principles, logical thinking, concrete knowledge and creativity, Korean culture emphasizes understanding abstract and superficial principles and mathematical application (KL-2).

KLs perceived that engineering *textbooks* written by Korean authors appeared to aim to improve technical and mathematical problem-solving skills, whereas Western textbooks provide deeper theoretical and practical explanations designed to prompt creative thoughts.

> Textbooks written by Koreans tend to be thin and have a lot of questions, just like Math textbooks; in contrast, books written by Western engineering scholars are very thick and have a lot of texts with deep explanation, and require lots of reading. Although Korean textbooks have some good points, Western textbooks are more beneficial, as, by reading a lot, students can learn that a theory or knowledge can be applied to many situations and how to apply it to actual situations. Korean books seem to assume that students solve problems only with the given questions (KL-2).

In addition, KLs addressed the difficulties of conceptualising examples in textbooks which use Western situations from Anglophone countries.

> Traditionally engineering textbooks are written in English. We don't feel serious differences and difficulties in using them. But examples in textbooks are based on Western situations, so students sometimes do not understand what is going on in the examples (KL-3).

Students were likely to be critical of the study approach in Korea, because the research and the study approach in Korea are perceived as limited, less original and less creative, than those in the global community.

> There are big differences in the research culture and quality of academic life. While students concentrate on deeper research about a single topic in Western culture, we tend to research many shallower topics in Korea (KS-Q).

> While, in the West, students are permitted to think freely, Korean people haven't been educated in the environments of creative thinking. Students tend to study within a given framework. There are big differences in the degree of understanding and the way of thinking. The whole structure of papers in the West is more logical (KS-Q).

Nonetheless, participants commented that Korean students and the academic culture also have strong and positive qualities in relation to studying engineering, such as diligence, mathematical skills, logical thoughts, computer techniques, information technology and analytical ability.

> Our students work hard, and are good at analytical ability, maths, logical approaches, and computer and information technology (KL-1).

> The lack of creativity and of a logical way of thinking has caused difficulties, but Korean academic culture has helped me as well (KS-Q).

The academic system for engineering in Korea seems to rely heavily on the dominant Anglophone academic culture of engineering. The perception is that the framework brought from the Anglophone culture has not yet been supported by a strong academic foundation in Korea. This may still lead to academically weaker and more vague foundations for research in Korean universities. KSs and KLs thus suggested *Korea-based original* research and resources, which can also become global assets of the engineering community.

> Korean people need to find a way to maximize Korean culture. We have just followed Western culture too much, which does not give an opportunity for Korean academic culture to develop (KS-Q).

> In order for us to know something clearly, that knowledge should be concrete and come from our own real situations. But, for now, our scientific academic basis is a bit weak (KL-8).

At College U

A number of USs raised the matter of the contrast in study approaches between Korea and the UK. They stated that breadth, speed and applicability are features of Korean academic culture, while British academic culture is based on deeper lines of thought and thorough, systematic and logical understanding. This comparison has led US-12p to conclude that the British study approach is more efficient.

> Whereas the Korean educational approach tends to focus on breath of knowledge, the British focuses on depth. Accordingly, the British style requires deep speculation about each subject, but might possibly lead to less applicability for studies in one area to the other areas. In Korean students' case, conducting their research according to the British academic style is significantly problematic, because of different study approaches (US-1P).

> Here, people tend to have a long preparation time. After full discussion and precise and step-by-step investigation, they start working with much information, although it takes much time. On the other hand, Korean people seem to start first and expect quick results. I found the British way is better and I'd like to learn their attitude. It decreases the useless repetition which we do in Korea (US-12P).

The gaps in research quality between two countries were attributed by USs to the lack of engineering specialists in the human resources of Korea (cf. section 2.4).

> Since UK lecturers have few students in the class, the quality of lectures tends to be higher and much more specific to their subject than in Korea. In contrast, some Korean lecturers in Korea take charge of more than three lecture courses, and two of them are not their main areas (US-Q).

However, USs were irritated because the educational systems and research approaches in the UK resulted in delays in processing research.

> Here, the supervisor does not give a topic directly to their students until they have spent a year of thinking and wondering about the area. After a year, students choose their topics after

discussing with the supervisor. So it takes a long time (US-16R).

In the British PG education system, students do not follow a definite schedule, so one easily loses skills of time management and self-motivation and it takes a long time to settle the approach to research... Supervisors are usually very busy. So students should frequently call and persuade their supervisors. Otherwise, it is difficult to get the degree in a reasonable time (US-5P).

I was not a hasty person in Korea, but here I feel that people are too slow. I made an appointment to give some data to a colleague within a certain time, but before that I needed to receive that data from a technician. He usually does not do it within the due time. I know he would have some reasons for delaying. Some time ago, he delayed for 3 months and I could not keep the promise to my colleague. I was angry with the technician (US-11P).

On the other hand, ULs complained about Korean students' lack of awareness and inflexibility toward UK academic approaches. ULs seem to be frustrated when Korean engineering students are not attentive to the expected behaviours of the dominant academic culture.

The approaches of academics in the UK are very different from the Korean academic environment. This is not normally appreciated by Korean students (UL-Q).

For example, ULs perceived that Korean students have aptitudes for numerical problems with only one answer and for reading and writing skills. However, students were seen to be unfamiliar with open-ended questions and physically demanding exercises in laboratories, whereas the engineering discipline requires students to approach problems creatively in real open-ended situations.

Let's say you have a problem-based course, where you are solving problems; generally that is the way of learning. Many times, the problems we have set have a clear answer and a numerical answer. It's one unique solution. That is very pleasing to people from the Far East because they are trained to solve numerical problems and to get a unique answer. They do that very well. When they come to problems that we don't know the answer to, and there are maybe many answers, open-ended problems, they don't like it. They don't do well. It is a cultural issue. British students have been trained from O levels to A levels to understand that sometimes you don't have answers to the problems. And they are quite prepared to try many things. But it is not the case with the Far East students (UL-1).

I tend to find the cultural differences; Asian students are less 'hands on,' less happy with getting their hands dirty in engineering than our British students would be. That is a very

broad generalization, maybe I am unfair. But I find Asian students tend to be happier with academic skills, reading, writing and mathematical deductions. They are less happy with practical skills. Maybe they are trying to separate truth out of more reading (UL-2).

Participants in Korea attributed their insecure study approach to an academically weak basis of engineering in the local context, and suggested more Korea-based research. USs evaluated the UK study approach as thorough and precise, but some were irritated by time delays. ULs pointed to students' weaknesses in open-ended questions and practical skills in handling experiments.

8.2.2. Failure to Recognize Cultural Problems

A number of KSs and KLs considered that the fundamental theory, logic and disciplinary conventions are internationally *shared* in engineering research and textbooks, and that studying engineering is culturally neutral, at least in the writing and reading of technical texts.

The most important thing in theses and textbooks is logical development and meaningful communication. Engineering is a subject which solves problems by means of logic; thus, there is not a big difference in academic culture in any places in the world (KS-Q).

Culture has not affected engineering research. There are only the differences in the ways of expression, research infrastructure and environments (KS-Q).

There is very little scope for technical writing to be related to cultural differences in any countries worldwide. Most of all, engineering materials are written in English, in Britain or America. So materials are not related to cultural effects, I think. My Polish student and previous Russian student did not have any difficulties because of cultural differences. When I taught in Japan, I did not feel the cultural gaps either (KL-1).

USs reiterated that the disciplinary culture of engineering was similar and universal around the world.

The cultural impact does not seem to be a critical factor to me. I think problems are caused mainly by language itself rather than cultural effects... In science and technology fields, we rarely think that cultural problems arise. We are usually concerned about mere knowledge transfer and information exchange... I really feel that the way of people live in the world is

more or less similar in my area; therefore, I cannot see any cultural differences in this global era (US-4P).

The way of studying is similar for engineering fields in the UK and Korea; foreign students just follow the lecturers' direction. The reason why Korean students can adapt to UK engineering system well is because of similar academic culture (US-6P).

Engineering subjects were brought into Korea a long time ago, and some KLs presumed that students were *accustomed* to the disciplinary culture, norms and conventions of engineering. KSs and USs also believed that throughout their study they were becoming used to the engineering disciplinary culture.

I don't think there is big cultural gap between Western academic culture and Eastern academic culture, because our society has already become westernised and our way of thinking has no problem in doing scientific or engineering subjects...although life styles or attitudes are different, for example, in front of a higher positioned person, people hesitate to say what they want to say, and so on. But these differences are not related to engineering study. There is an opinion that Korean students have difficulties in thinking and dealing with engineering knowledge, only because scientific knowledge and skills had come from Western countries. But I don't agree with that... If Korean students stay in foreign countries, then they may have cultural difficulties, but here we don't have any difficulties because of cultural differences (KL-14).

I don't feel any big cultural differences, because, I guess, I have studied engineering in this way for quite a long time, and I have usually studied with lecturers who studied in Western countries (KS-4P).

In engineering, Western culture has already been introduced to Korea and I have read literature written in English ever since my undergraduate course, so I don't feel differences (KS-Q).

I did not have a problem since I did my undergraduate study in the UK (US-Q).

Indeed, some USs, who had stayed in the UK for a relatively longer time (7 years 7 months-14 years 6 months; cf. Table VI in Appendix I), mentioned that they feel *more comfortable* in doing their academic work at UK institutions, because the academic culture in the UK is more informal and learner-centred, and values the students' ideas and private lives.

> I don't have many cultural difficulties here. We should just study, research and write papers. In that sense, the engineering field is culturally easy and simple... So after long study in foreign countries, it will be difficult for me to be fit into Korean academic culture (US-16PD).

> British people tend to value their private lives, not interfere in others' lives, and behave individually. At first, I had hard times due to that. Now I feel more comfortable with this culture (US-13P).

> Lecturers are mostly polite to students and value students' ideas very much. Students' power seems stronger than in Korea. At first, I was embarrassed by this fact, but soon I found it's more comfortable. (US-15M).

> I haven't had any sociocultural problems here. We Koreans are usually very polite and modest, and lecturers seem to be in favour of our attitude very much. We also study very hard. I think lecturers are kind and understand my situation well. When I started my study, the IMF (International Monetary Fund) crisis had just occurred and lecturers considered our situation and tried to help (US-9M).

Other KSs simply replied they had no ideas about differences in academic culture, since they lacked direct experience in foreign countries.

> We do not know exactly about Western culture, as I don't have direct experience of Western culture. So, I cannot compare two academic cultures or explain difficulties due to cultural differences (KS-Q).

Numerous Korean participants in both contexts were not able to recognize sociocultural problems, because the disciplinary culture of engineering was considered to be similar worldwide or they felt that they were accustomed to the disciplinary culture of engineering. USs who had studied for a longer time in the UK even felt more comfortable within the UK academic culture than in Korea.

8.3. Summary

KSs tended to criticize their own sociocultural behaviours because its mismatch with expectations in the global community was perceived as preventing them from participating actively in the global academic practices, for example by presenting arguments, questioning and discussing. They also pointed out the academically

shallow basis of engineering in Korea and the hierarchical relationships between students and lecturers. Nonetheless, they replied that they mostly maintained their own academic culture through studying alone, reading texts and listening to lectures.

Some KLs were concerned about students' non-participatory and non-discussing behaviours in the global community. On the other hand, other KLs emphasized positive aspects of Korean students' attitudes and suggested that students should maintain their academic culture by focusing on the conceptualization of knowledge rather than social interactions and discussion. KLs called for Korea-based engineering research to establish a concrete academic basis in Korea.

In facing different sociocultural expectations of the UK mainstream academic culture from those of their home academic culture, USs tended to struggle, feel threatened or be annoyed, because of what they perceived as too much trivial questioning in the class, discussion-based study, time delays and informal relationships with supervisors. USs attempted to adapt, resist or reshape the existing academic culture. However, USs who had stayed longer in the UK academic culture felt more comfortable with it, and others came to feel that the study approach which they encountered in the UK was academically more precise than in Korea.

ULs were seriously discontented with and frustrated by students' avoidance of questioning, discussing, challenging lecturers and being embarrassed. ULs assessed students as having weaknesses in open-ended questions and practical techniques used in experiments. Lecturers suggested that students engage in more social interaction with supervisors and native English speaker colleagues in order to adapt to the UK academic culture, while one Spanish lecturer attempted to be flexible for Korean students because he appreciated their sociocultural difficulties.

8.4. Discussion

In contrast with the findings on the importance of English and communicative skills

in the previous Chapters 6 and 7, this chapter shows the diversity in participants' perceptions of the sociocultural behaviours. This is explained by the fact that, although they agree on the importance of linguistic knowledge and academic literacy in English, each member of the participant groups may have different sociocultural beliefs, experiences, commitments, values, histories and understanding of power relations within the academic community (Hyland, 2000).

First of all, a great number of students and lecturers *in Korea* illustrated Korean students' difficulties concerning their reluctance to present their own arguments, and their lack of questioning, discussing and debating. Traditionally, students normally studied by reading appropriate texts, with no attempt to discuss with others during the courses. Moreover, students did not have much opportunity to participate in the practices of the global community (Kramsch, 2002) by presenting their ideas and interacting with foreign engineers in English. The apparent reticence and passivity of students was now generally shown to be in contrast to the expectations of the global community. In addition, pointing to the academically shallow basis of engineering knowledge and the hierarchical knowledge transfer in the Korean context in comparison to Western countries, participants tended to possess negative self-images, due to the fact that Western culture and knowledge are dominant in the current globalised academic community.

Given that the movement of globalization has required Korean students to participate more in international forums, students have been encouraged to have more frequent academic and social contacts with foreign engineers. Accordingly, students in the local context may be affected by the dominant culture in the global community, and reflect on their own study behaviours, educational system, value systems and resources. Most KSs and KLs have studied or taught only in Korea, except for a few participants (see Tables II & IV in Appendix I). As a result, they seemed to have an essentialized view of the differences between their own academic culture and the dominant Anglophone, especially American, academic culture, without recognizing the cultural differences within societies and the existence of other diverse cultures. This culturally dichotomous perspective seems to "reflect and create particular power relations in which the dominant group defines the subordinate group"

(Kubota, 1999:11). The dominant disciplinary culture seems to be highly biased toward the Anglophone academic culture, at least in the Korean academics' perceptions. This bias is especially the case in a society like Korea, which has mostly been monocultural throughout its history. Due to these perceived gaps in expectations between the local and the global, a number of students experienced cultural conflicts, embarrassment and crisis of identity (Ivanič, 1998).

The cultural gap may be hard to be overcome, because students cannot suddenly discard their home culture and shift to a different one. Most students have maintained their own academic culture; that is, they study by reading the literature and listening to lectures, following their local academic culture rather than actively accommodating expectations in the global community, although they aspire to join that community. In a way, this situation is likely to be a contradiction, and students seemed to struggle between local and global expectations. Lecturers also seemed to have contradictory views about how to direct students, because, while some KLs were concerned about their students' reluctance to present arguments, others suggested that students sustain their own academic culture by reading literature and writing papers on their own.

However, these struggling, self-critical and self-reflective processes can be "crucial elements of critical work" (Pennycook, 1999:345). With this self-criticism, students may attempt to start negotiating between different expectations. In the process of negotiation, students may begin to acknowledge their own cultural values and inequalities in academic situations, as well as the target needs in the community (Benesch, 2001:63). Any community is composed of diverse individuals; culture varies internally as well as across nations, and cultural diversity can make the engineering community richer (section 4.4). Therefore Korean students' behaviours can be constructed affirmatively for their own benefit as well as for the development of a global community. For example, although students in Korea consider listening as a passive behaviour (section 8.2.1.1), reflective, critical and active listening can be a productive way of study. KL-1 also emphasized Korean students' academic strengths such as mathematical skills and computer technology. Considering these positive aspects of learning in Korean academic culture, students "have to adopt

many subtle and creative strategies of communication to construct" their own way of learning (Canagarajah, 2002:40). It is crucial for Korean engineering students to "shuttle" (Canagarajah, 2002:41) between local and global expectations, to build their own identities as members and to constructively engage in disciplinary practices in the community.

In addition, in recognition of students' disciplinary, linguistic and sociocultural dilemmas, KLs may need to understand students' difficulties, and guide them to be flexible in multicultural and diversified environments. KLs are in a good position to understand the cultural discomforts of students, because they have had their own experience in the engineering discipline in various contexts throughout their careers. For example, hierarchical relationships and respectful attitudes to teachers are established forms of interaction among Korean people. However, these relationships should not restrict students' creative and independent thinking. Innovative attempts to allow more effective idea exchanges and communications between students and lecturers are necessary in the classroom, rather than mere teacher-dominant knowledge transfer.

Concerning textbooks written in English, participants in Korea acknowledged the contents, knowledge and expressions to be impractical and superficial for them, therefore remote from domestic situations and values. Korean students are often forced to study engineering textbooks and journals written by Anglophone authors from totally different backgrounds, with exotic examples. This has caused difficulties in studying engineering in the Korean contexts, as students cannot match the knowledge and theory in the textbooks, with real situations in their domestic environments. In recognition of this, KLs need to highlight the sociocultural and geographical distinctiveness of textbooks, and encourage students to research how to solve problems grounded on Korean local contexts.

Furthermore, given the shallow foundations of engineering knowledge due to the Western-based knowledge system in Korea, as admitted by Korean academics, students should be motivated to develop Korean inventions and establish them as world standard by using 'International Engineering English' (section 3.7.2). Korea

has endeavoured to establish its own technology at a global standard (see section 2.4), and its engineers continually have the responsibility to develop more knowledge as global assets, using their local experience and technology and writing and presenting their ideas to the engineering community. These endeavours would allow the study basis of engineering in Korea to be firmer and more concrete, and eventually contribute to the richness and diversity of knowledge of engineering in the community (cf. section 4.3.3.2). EAP can help students to express their creative and original ideas to the international community.

In sum, Korean students need to have a critical and flexible perspective on how power is constructed in the world community, how they can accommodate their own rights (Benesch, 2001) in the current institutional systems, and how they can bring their own inventions and technology to the global community. Lecturers in Korea, as established members of the academic community, also have to engage critically in students' sociocultural issues (Singh & Doherty, 2004:21), and encourage students to participate constructively in the disciplinary culture of engineering and to learn effectively and creatively in the community. Rather than merely being critical of their own culture or complying with the needs for academic linguistic skills and the dominant culture, Korean academics need to create "continuous reflexive integration of thought, desire and action" (Pennycook, 1997:266) in developing flexibility and in negotiating different cultures in the community of practice.

In the UK, USs' views on sociocultural behaviours were also quite diverse. These Korean students are either immigrant or international students in the UK and are not a uniform group (Tables V & VI in Appendix I). In general, although the majority had studied in the UK for at least 2 years, their sociocultural participation and adaptation to the academic practices did not seem to be easy. Students were still not used to the UK academic culture, with its different interactive modes which include expressing arguments, questioning and discussion, informal relationships with supervisors and time management. Students often experienced identity confusion. They tended to contradict, struggle against, resist the local academic culture in the UK and retreat into the home academic culture depending on the situation, although they acknowledged the expectations of the UK academic culture. For example,

students might oppose questioning, because this was seen by them to require certain types of logic and clear explanations as well as English competence, especially in the classroom facing peer pressure. The students resisted the practice of questioning and answering, and opted for reading literature and searching the internet (section 8.2.1.2). This is because, in Korea, written texts tend to be considered as authoritative sources of knowledge and are used to private study, whereas in the UK social interaction by questioning and discussion is more valued (Jin & Cortazzi, 1998).

Moreover, USs felt uncomfortable and embarrassed with the informal relationships with their supervisors, while lecturers expected students to challenge and argue with them (section 8.2.1.4). The informality and lack of deference to supervisors seemed to confuse Korean students, who are used to more formal and hierarchically structured power relationships with their supervisors "as a basic feature of their relationship" in their home academic culture. Students may be puzzled by "the limits and boundaries to what can or cannot be expressed" and by the different social distance from supervisors (Myles & Cheng, 2003:253). They tend to strategically "maintain social distance, and avoid the threat (or the potential face loss) of advancing familiarity towards the addressee" (Brown & Levinson, 1978, 1987), since academic interaction is "seen as inherently imposing, involving numerous Face Threatening Acts (FTAs)" (Hyland, 2000:15).

Therefore the developmental process of building identity in the different cultural setting seems to be much slower than the acquisition of linguistic skills, especially for adult learners. While USs believed that learning linguistic skills is important for communication, they found it hard to meet the expectations of the UK and struggled to adapt to the academic culture especially when they were required to present their arguments and ideas.

As time went by, however, USs attempted to adapt to the local academic culture, and some eventually came to feel more comfortable with it. This is because they learned how to negotiate different cultural systems and how to participate in the communities of practice. Students' practices of negotiating with lecturers and reshaping the UK

academic culture might be beneficial for their own academic development. For instance, USs attempted to ask questions to lecturers after class, rather than in the middle of the class (section 8.2.1.2). This strategy might be helpful, especially for personal questions to lecturers. In the UK classroom, certain students often dominate, and others do not have opportunities to ask questions because of their level of English, cultural reasons, their temperament, or time to formulate questions. Therefore, the system of asking questions to lecturers after class, which is a productive learning and communication strategy of Korean students, would benefit many students, including shy British students. However, a difficulty might be that lecturers do not provide time for students to ask questions after class. Alternatively, students could use the e-mail system to ask questions or give comments to lecturers, since nowadays internet communication is convenient.

Therefore a mid-way solution, accommodating the academic culture, but not abandoning one's own identity and value system, may require flexibility, open-mindedness towards the other culture and "a critical negotiation with dominant conventions" (Canagarajah, 2002:40) in the multicultural community. That is, in understanding the dominance of a certain academic culture in the global community, critical awareness, which is "the creative practice of probing and shifting existing conventions" (Fairclough, 1992:53) in the situated context, may be a desirable precondition. Students hence need to be encouraged to participate critically and creatively as members of that community.

On the other hand, ULs had strong perceptions of students' cultural problems, and recommended students' active participation and interaction in the UK academic practices of engineering. Some of them are also non-native speakers and have experienced the cultural conflicts in the academic community for a long time. ULs have a view of what it means to be a 'proper engineer,' which to have certain ways of looking at the world, and approaching practical problems and philosophical themes. This view seems to have something to do with the values and the attitudes, embedded in the disciplinary culture, to what it means to be a particular kind of academic in the engineering community. ULs expected students to make use of chances to actively and creatively engage and socially interact through collaborative

projects and formal or informal correspondence with other engineers in the community. This is because engineering is not just technical knowledge or mathematical skills. It is more than that; it requires communicating and sharing ideas for solving problems in dynamic real-life situations (cf. section 3.7.1).

Having a responsibility to instruct Korean students on becoming members of the global engineering community, ULs recognized dilemmas in dealing with students' behaviours, and felt frustrated by students' reluctance to present ideas, introverted attitudes, lack of discussion, interaction and questioning, avoidance of face-threatening activities, and never challenging attitudes toward lecturers.

Nonetheless, their hasty demonstration of dissatisfaction with students' behaviours may not be helpful for students, because this can lead to communication barriers which "can lead to misunderstandings and potentially insulting remarks and behaviours" (Myles & Cheng, 2003:252) between students and lecturers. Students cannot be compelled to give up their own culture and value systems and accept ruthless acculturation to the dominant culture, because doing so will make them emotionally hurt and destroy their own identity. Students may accumulate negative preconceptions and severe resistance toward the mainstream culture (Shamin, 1996). ULs therefore need to understand the fundamental gaps between students' academic culture and lecturers' expectations, be sensitive and open-minded about students' cultural differences, and encourage students to participate in communities of practice. One Spanish lecturer (UL-1) attempted to negotiate his attitude to the students' culture, because he, as a previous non-native student, understood Korean students' cultural difficulties in the UK classroom (section 8.2.1.3). Lecturers thus need to "think critically... to design pedagogic strategies" (Singh & Doherty, 2004) to release the cultural tensions and encourage students to negotiate with the dominant sociocultural norms.

Lecturers in the UK recommended that students mix with native colleagues. However, Asian students do not tend to be acquainted with native students at Anglophone universities (Dong, 1998; Leki, 2006; Myles & Cheng, 2003). Students may be more emotionally comfortable with colleagues of similar ethnic

backgrounds. Consequently, they may lose invaluable learning opportunities to experience the culture of British people in the UK academic setting. British or Anglophone students also need to have an open mind towards the different culture of non-native colleagues, although most Anglophone students do not tend to interact with L2 students and experience "cultural diversity" (Leki, 2006:143). To build membership in the community, there should be "mutual engagement of participants" (Wenger, 1998:73).

In fact, a number of participants were ignorant about issues of culture. They believed that the engineering disciplinary culture was similar worldwide, or they were already used to the disciplinary culture of the global community. They seemed to believe that engineering is "neutral rather than cultural and social; academic institutions are neutral places rather than sites of struggle between competing interests" (Benesch, 2001:45). This perception may not be profitable for their academic development because, to participate actively and critically, students need an understanding of how people communicate, interact and negotiate in their social communities. In addition, engineering as a human science requires students' interactions with people in order to solve problems in diverse local contexts. Learning languages well also requires the understanding of other cultures and behaviours. Rather than simply taking for granted that the disciplinary culture of engineering is universal, engineering academics should take sociocultural issues seriously; doing so would be a productive learning strategy for their study.

To sum up, all groups of participants in the UK and Korea need to be socioculturally sensitive, critical and flexible members of their academic culture as well as of the global community. Flexibility provides possibilities to negotiate with different kinds of study behaviours in multicultural academic contexts. Both students and lecturers need to be critically aware of cultural norms and expectations in the global world order of the engineering discipline. This is because culture also "constantly shifts under the influence of political, economic and technological developments as well as domestic and international relations of power" (Kubota, 2004:38). Such awareness would eventually lead students to work as "social beings...[as] knowing is a matter of participating in the pursuit of the enterprises, that is, of active engagement in the

world" (Wenger, 1998:4).

Finally, therefore, it is crucial that EAP teachers are sensitised to students' needs in relation to sociocultural attitudes (Dudley-Evans & St. John, 1998:66) in order "to lead to better ... understanding and communication among the faculty and students within the community, as well as greater social and academic fulfilment" (Myles & Cheng, 2003:249). EAP instruction and curricula should establish cultural issues as major contents. EAP should be designed to help students establish critically their positions and identities by their own choices in the multicultural environment, and encourage them to have open minds and to negotiate sociocultural dilemmas and participate flexibly and critically in communities of practice.

In this chapter, I have shown that globalization posits diverse perceptions of engineering academics on sociocultural behaviours, both in the UK and Korean academic contexts. This diversity has also caused a great amount of sociocultural tensions between global and local expectations, identity crises for Korean academics in both contexts and the frustrations of lecturers in the UK. I have argued that in these circumstances flexibility, critical cultural awareness and cultural sensitivity are useful strategies for both Korean students and lecturers to negotiate the sociocultural dilemmas in the global community.

Throughout Chapters 6 to 8, I have examined the perceived needs regarding the importance of English, language skills and study skills and sociocultural behaviours for Korean students in two local contexts. These needs are linked to students' aspirations to participate in the global academic community while negotiating tensions between the local and the global for their own good. Within the global order in both contexts, perceived needs of students are approximately congruent in the use of English and practices of literacy (Chapters 6 & 7), while being more divergent in sociocultural behaviours (Chapter 8). These findings seem to suggest reshaping and rethinking the roles of EAP teachers, and have implications for the directions of EAP practices and research in the era of globalization, as I will explain in the next chapter.

Chapter 9. Implications for EAP and Conclusion

9.1. Initial Research Questions

This study has aimed to interpret Korean engineering postgraduate students' needs in English in view of globalization. As globalization has strikingly changed the needs and conditions of language teaching and learning (Block & Cameron, 2002), the theory and practice of needs analysis in EAP required to be re-conceptualized. This research project therefore attempted to look at the situation widely and comparatively, rather than focusing narrowly on only one aspect of learners' needs in language teaching and learning, in order to provide English teaching practitioners with a comprehensive understanding of the needs of Korean engineering students. In this study, students' needs were thus investigated in terms of three interrelated broad enquiries: the importance of English, skills-based needs and needs related to sociocultural behaviours. The enquiries focused on students' and subject lecturers' perceptions both in Korea and the UK

Students' perceived needs were examined on the premise of the specific research questions, namely:

1. *How far and why do students and lecturers perceive English as important in order to enable Korean postgraduate engineering students to succeed in academic contexts?*
2. *Which English language skills and study skills do they perceive as crucial for students, and why?*
3. *How do they perceive the problems of students' sociocultural behaviours, and why?*
4. *In all these enquiries, what similarities and differences can be observed in the perceptions of students and lecturers across the UK and Korea?*

In this chapter, I would like to sum up the major findings for the questions of this study. I then suggest some implications of these findings for EAP pedagogy for L2 postgraduate engineering students in the era of globalization. Following from these, I address the limitations of my research and make recommendations for future research. I finally conclude by reflecting on the contributions of this study to the field of needs analysis in EAP and by making evaluative remarks regarding what this research project has proposed.

9.2. Needs of Engineering Students in the Global Age

9.2.1. The Changing Roles of English

This study firstly focused on perceptions of engineering academics about how and why English is or is not important in their academic contexts. The discussion of the data showed that in engineering academics' perceptions English seemed positioned crucially as an indispensable medium of communication, whatever their locations, status, English proficiency and backgrounds were. Globalization has resulted in English becoming a powerful means which allows Korean students, not just simply to access global resources and to study effectively, but also to communicate and interact with engineers and people from other nations worldwide and to be recognized as *bona fide* members of the international community.

Therefore English was seen as not just for English majors or native-speakers but also for anyone with special interests and purposes in communities, regardless of geographical regions (Canagarajah, 2006). This state of affairs suggests that English learning for L2 students involves a wide range of composite tasks which include sociocultural competence as well as communicative skills in the engineering community, and these demands were encountered more intensely by postgraduates. In this regard, Korean engineering academics acknowledged that both English and subject knowledge are crucial, and proclaimed that special kinds

of English for the discipline are necessary (Turner, 2004) in order to communicate effectively in the academic community. At the same time, engineers were required to have flexibility and cultural sensitivity, in order to interact with people from diverse backgrounds in multicultural academic settings and to solve problems in a variety of local contexts.

Nonetheless, Korean engineering students tended to delay learning English. Some engineering lecturers and students were unaware of the role of language, or believed that mathematic symbols and diagrams are more important media for their communication than English. Without adequate facilities to learn necessary English for their study, engineering academics seemed to see English as a separate subject or as a burden remote from their academic interests. These circumstances imply that well-focused EAP programmes should be promoted to facilitate discipline-specific literacy and flexibility, for the sake of students' academic development in the era of globalization.

9.2.2. Expanding Requirements for Skills

Secondly, I enquired into the discussion regarding which language skills and study skills are perceived by students and lecturers as significant for Korean engineering students in the UK and Korean contexts. Contrary to my prior assumption that there must be different preferences for language skills among the four groups, all groups of participants agreed that students required to be equipped with a flexible combination and balanced competence of all language skills, in order to fulfil real-life communicative tasks and to engage in meaningful conversations in the engineering community.

Engineering academics also clearly acknowledged the importance of discipline-specific study skills for their study practices, indicating that the use of skills is contextualized in the discipline rather than transferable to other disciplinary areas. That is, "knowledge" is seen as "a 'language game' that is maintained through the interaction of community members" (Canagarajah, 2002:30). More than this, UK-

based lecturers proclaimed the needs for postgraduate students to negotiate and debate with lecturers and to write their own ideas in their own words, rather than simply accommodating rigorous rules and conventions. Students were thus required to access 'academic literacies' (Lea & Street, 2000) for their practices in the discipline. At the same time, engineers were required to have general communication skills for social interactions and communication with engineers or other people of diverse nationalities. Therefore, to be a proper engineer in the global community, students should be equipped with both engineering-specific literacy and general communicative competence.

Students in both local contexts are commonly involved with various academic practices in English, requiring similar kinds of and competence of study skills. Thus the practices in which students need to use English are expanding, and the requirements of discipline-specific literacy are increasing in Korea. However, there were also differences in the rigor and the expectations of study skills in the academic practices in each context, depending on the students' levels, views of the functions of skills in English and educational values.

9.2.3. Prevalent Concerns with Sociocultural Behaviours

In dealing with the issues of sociocultural behaviours, I was aware of the problems of relying only on participants' perceptions (see sections 5.3 & 9.4). Despite the methodological weaknesses, the semi-structured interview data clearly showed a variety of sociocultural concerns among Korean students through participants' own voices in both contexts. Students in Korea revealed diverse sociocultural dilemmas and conflicts due to the elements of their home academic culture, such as reluctance to present arguments and lack of questioning and discussion, which were shown as being counter to the expectations in the global community. Additionally, Korean academics pointed to the academically shallow foundation of engineering knowledge and the hierarchical knowledge transfer in Korea in comparison to Western countries. They seemed to possess negative perceptions of their own

culture, on the basis of an essentialized view of differences between their academic culture and the dominant Anglophone academic culture (Kubota, 1999) in the community.

Having difficulties in adapting to the dominant academic culture in the UK, some students tended to struggle against or resist it, or to retreat into their home academic culture. Other students, in contrast, were unaware of the social and communicative roles of English and social expectations in the global community, and simply believed that engineering is culturally neutral, while lecturers in the UK were frustrated by the non-participatory and non-interactive behaviours of Korean students in the academic community. Thus problems of sociocultural behaviours were shown as pervasive in both learning settings. In this regard, all groups of participants in the UK and Korea should be socioculturally sensitive, critical and flexible members of the global community. Korean participants also proclaimed the necessity of making Korean technologies and inventions achieve world-class standards and of studying how to solve problems of engineering grounded in the Korean local context.

9.2.4. Comparison of the Two Contexts

There was much commonality in the participants' perceptions about the importance and requirements of English competence and communicative skills for students both in the UK and Korea, because engineering students share disciplinary purposes and discourses (Hyland, 2002) and make frequent global contacts in the academic community. However, participants showed diverse and conflicting perceptions of the sociocultural behaviours and skills, depending on the participants' status and preferences and the expectations in academic practices, and situated contexts of Korea and the UK. These similarities and differences of needs of Korean engineering students implied a great deal of tension (Canagarajah, 2006) between disciplinary and academic cultures, between the global and the local, and between socialization and critical cultural awareness in the community.

In order to participate constructively in the global academic community, students, therefore, seemed to require unified access to discipline-specific literacy and norms as well as negotiation of diverse sociocultural behaviours in multicultural academic contexts. For all these practices, both students and lecturers need critical awareness and flexibility, to be or to encourage students to be genuine members of the community in the global age.

9.3. Implications for EAP Pedagogy

Comparative speculations on academics' perceptions of Korean students' needs in English in the two contexts lead to a call for thoughtful directions and renovations in EAP programmes for Korean postgraduate engineering students. Although I originally aimed to seek a desirable EAP approach for Korean universities, the results showed that the ESL/EFL dichotomy of EAP contexts is nowadays becoming blurred in participants' perceptions of needs of students, and the implications of the findings of this study can be applied to EAP programmes for L2 engineering students in the UK as well. Therefore in this section I will focus mostly upon the commonly emerging implications for EAP programmes in both contexts.

9.3.1. Instruction in Multiple Skills

The dominant way of EAP instruction has concentrated on teaching separate language skills and study skills for pedagogic convenience. However, such practice was not able to meet the current requirements of real communicative situations in engineering academic contexts. As the research data clearly indicated, EAP pedagogy should aim for a balanced competence in the language skills for students, while giving special emphasis to oral communication and writing skills for Korean engineering students. EAP teachers should also consider that there are sequential expectations of language skills according to the academic progression of postgraduate engineering students.

The range of models of multiple skills approaches can be myriad (Hinkel, 2006). Instruction in language skills can be combined with special emphasis on one or two study skills, such as speaking and listening with sociocultural sensitivity (Bosher & Smalkoski, 2002), listening with reading skills (Murphy, 1996), speaking and writing in a discipline (Young & Avery, 2006), and a process approach to writing with genre-based reading in the discipline (Hirvela, 2001; Paltridge, 1997; Parkinson *et al.,* 2007). Multi-skills instruction also needs to be used in conjunction with discipline-specific literacy, as explained below.

9.3.2. Instruction in Discipline-specific Literacy

This study has shown that a particular variety of literacy, integrated with the knowledge and epistemology of the engineering discipline, is crucially entailed for engineering students. It is therefore important that EAP teachers assist and guide students to be aware of the conventions and cultural aspects of their discipline, so that they carry out academic practices effectively. Content-based instruction to teach academic communicative skills (Bosher & Smalkoski, 2002; Parkinson, 2000), a process approach involving task-based or project-based instruction (Paltridge, 1997; Yun-Zhu, 1999), and team teaching by EAP and subject teachers to enable students to meet the discipline-specific expectations of English-speaking journal referees and editors (Cargill & O'Connor, 2006) are useful examples of integrating discipline-specific literacy and disciplinary culture in EAP programmes.

In the case of advanced learners, particularly Ph.D. students, EAP teachers need to encourage them to participate critically in literacy practices. These practices are not just a matter of reproducing the patterns and genres of texts or listening to the supervisor's comments. Students should apply their understanding that "academy is not homogeneous culture," but "the process of meaning making and contestation" Students need to go on to the stage of "deploying a repertoire of linguistic practices appropriate to each setting and handling the social meanings and identities" (Lea & Street, 2000:35). In order to facilitate work at this level, as Lillis (2006) suggests, dialogic interaction between students and EAP teachers to facilitate students'

participation in existing practices, while offering opportunities of exploring alternative ways of expressing meaning, seems to be beneficial as academic literacies pedagogy.

9.3.3. Specificity and Flexibility in Designing the EAP Curriculum

Depending on the levels, progressions and needs of learners, flexible combinations of the approaches of EGP (English for General Purposes) and ESAP (English for Specific Academic Purposes) (cf. section 3.6) may be useful for Korean engineering students throughout their college lives. For example, when students have concrete needs in learning English for specific academic fulfilment and study efficiency in their disciplinary areas, ESAP approaches may be beneficial. However, when students go on to highly advanced or professional levels to solve problems in real-world situations, the engineering discipline requires students to communicate in English with people from diverse backgrounds in multicultural settings. This requires students to have a convincing level of general communicative competence and cultural sensitivity best taught by using an EGP approach. In this way, students may learn a certain level of general English knowledge up to the lower undergraduate level, then more on to subject-specialized English, and return to general English for communicative competence at a professional level.

EAP could thus be more flexible and responsive to the needs of language learners, and encompass the multi-faceted needs which arise among learners. Situated EAP programmes on the ground of the flexibility and continuum (Dudley-Evans & St. John 1998; Figure 3.1 in section 3.6) may help learners to meet the particular purposes of the engineering community. The programme could expand from general English courses for oral communication skills, grammar and pronunciation, through to very narrowly directed specific courses including the study of discipline-specific literacy and conventions, specific terminology and presentation skills.

9.3.4. Bringing Engineering Knowledge from the Local Context to the Global Community

It is important for Korean engineers to bring their own engineering knowledge to the international community. This involves making more Korea-based innovations and technology to be of world standard, in order for them to obtain proper recognition from the world community and join the competition in the global markets. Globalisation has opened possibilities of sharing cultural resources, common interests and purposes among nations in a global dimension. This implies that engineering academics use 'International Engineering English' (section 3.7.2) and discipline-specific literacy, in "expanding participation in global knowledge networks" (Hyland, 2006:25).

Therefore EAP has an essential role to play in helping Korean students to deploy their own inventions or cultural heritage as human resources for the international engineering community. EAP teachers need to raise students' awareness of the value of learning discipline-specific literacy and English (Kim, 2006). This procedure may lead to the foundations of engineering knowledge becoming firmer in Korea. Exploiting their own knowledge, Korean scholars may have more opportunities to publish articles in international journals and textbooks.

9.3.5. Facilitating Critical Cultural Awareness

Apart from the use of English and practices of discipline-specific literacy in the engineering community, another crucial aspect of their learning concerns how they behave in negotiating and participating in dynamic interpersonal situations in the community of practice. In all these practices, rather than showing criticism of their own culture and educational system or passively carrying out academic tasks in accordance with the dominant culture of the community, students should learn how to negotiate the tensions and conflicts among members with diverse expectations, to

find their own ways of participating, and sometimes to resist creatively and critically in the multicultural global community. This is because globalization is a cultural process rather than fixed acculturation (Singh & Doherty, 2004), and the community is also changing and will be more diversified and multicultural.

Students may thus need to have an opportunity in EAP programmes to discuss "how cultures differ" and "to critically re-evaluate the taken-for-granted conceptions about cultural groups" and "norms that have been internalised locally" by Korean students (Kubota, 2004:45-48). EAP teachers can provide opportunities for students to reflect upon and share their own experiences of the negotiation of cultural discords and of 'good' reflective resistance in academic settings. EAP teachers can also bring UK-based Korean students' experiences of negotiating cultural conflicts to the classroom in Korea, because students are often persuaded by the experiences of ex-students (Kim, 2006; see section 1.5). In this way, EAP can play a role to bridge students and lecturers from diverse cultural backgrounds, and release tensions between the local and the global in the community.

Rather than relying on the 'received view' of culture (Atkinson, 1999) or intuitions for teaching L2 students, both EAP teachers and subject teachers in the UK need to critically consider dominant expectations of sociocultural behaviours in UK higher education, and to understand Korean L2 students' cultural dilemmas, as UL-1 did (section 8.2.1.3). A critical stance requires not simply being critical of others, but also being prepared to be reflective about one's own practice (Canagarajah, 2002).

9.3.6. Institutional Change and the Roles of EAP Teachers

The current practice of English language teaching programmes in Korea is predominantly centred on improving general reading skills and test-based English teaching (Chapter 2). However, the rapidly increasing number of foreign students in Korean universities and heightened pressures to play a part in the international academic fields of practice urgently call for innovative and qualitative EAP programmes for Korean engineering students. The course should be rooted in long-

term goals, encompassing aspects of sociocultural behaviours as well as discipline-specific literacy.

The success of EAP courses certainly depends on the role of EAP practitioners, which is now expanding and challenging. In this regard, first and foremost, EAP teachers' awareness of the unity and diversity of learners' needs in the global age is important. The new demands for multi-skills, discipline-specific literacy, critical awareness and flexibility enabling students to fit the global world order may not be easy to meet, and doing so will take a long time. Under the "institutional constraints" (Hyland, 2002:392), how EAP teachers meet the needs in English and how they can set up desirable directions for students' subject study are crucial issues for EAP teachers.

Broadly speaking, learners' distinctive needs as they arise within the engineering discipline should be considered through the phases of material production, curriculum and syllabus design, and teaching and learning in each context. It may be necessary for EAP teachers to endeavour to keep up to date with the formats and materials of the content class, and to continually keep in contact with subject teachers (Kim, 2006). At the same time, EAP teachers should lead students to be "open to the possibility of questioning" the target situations while students are responsive to the demands of the target situations (Benesch, 2001:138). Flexible and critical views on learners' learning situations, continual research for ways of how to meet the needs for skills, sensitivity to students' struggles and aspirations, and attempts to empower them to establish their own rights may uphold effective practices in EAP programmes.

Finally, it is necessary to consider the 'ecological issue' of how to ensure that EAP continues to function successfully in local situations (Holliday & Cooke, 1982) such as Korea. For this reason, Kramsch (1998b) and Dudley-Evans and St. John (1998) stress the role of the non-native EAP teachers. On-going, direct observation of "local realities" may be necessary to minimize failures of EAP curriculum innovation to function effectively in the local system (Holliday, 1992:420).

9.4. Recommendations for Further Study

In reflecting on my research procedures in this section, I would like to consider the limitations that I have encountered in carrying out this needs analysis, and to provide recommendations for EAP researchers undertaking future needs analysis. Firstly, in an attempt to examine the needs of Korean students from the perspectives of diverse groups of participants in two contexts, I may have failed to select the most meaningful samples for my research. This is because students at College U and College K, which are among the most prestigious universities in the UK and Korea, may have faced stricter English requirements within their courses in order to participate in the global academic practices. Lecturers may also have particularly high standards regarding Korean students' communicative needs in English and the disciplinary culture of the international engineering academic community. The phenomenon of globalization may be more intensified for engineers of a high calibre like them, because these students may have more opportunities to meet and collaborate with multinational engineers in the global milieu. This may have caused a biased result and over-generalized perceptions of all Korean engineering students' needs.

Moreover, the motivation to use English for entering global networks is greater for engineering students than for students of other subject areas (Crystal, 2003; Wood, 2001). Such students may have strong views on the importance of English, skills-based needs and sociocultural behaviours in the global community. Even though knowledge of their perceived needs in English is an invaluable resource for EAP teachers when they lead groups in the specific areas, these perceptions can hardly be generalized to all other L2 students in all tertiary institutions in the UK or Korea.

Secondly, this needs analysis was performed in the light of students' and subject lecturers' perceptions. Although the study of subjective needs, based on the participants' perceptions, can provide profitable approaches towards problematising target situations and invoking learners' own rights in their learning (Benesch, 2001; section 4.1.2), such study may not constitute investigations of the contextual and

textual needs of students. Additionally, there was a possibility that "respondents' perceptions of what they do may be quite different from what they actually do," and "surveys tend to force a set of preconceived categories onto their respondents" (Cooper & Bikowski, 2007:208). Although my own insider's knowledge of engineering students' learning situations allows me to have a particular understanding of participants' perceptions, more qualitative research tools such as observation, case study or attention to samples or lecturers' written feedback on students' writing might have complemented the data on L2 engineering students' skills-based needs and sociocultural behaviours.

Thirdly, in this research project I attempted to present a broad picture of the perceived needs of Korean engineering postgraduate students in two tertiary institutions in Korea and the UK. Due to the wide scope of this research, it excludes precise descriptions and in-depth speculations on specific needs, which might, for example, have focused on a group of participants in a specific area of engineering, such as Mechanical or Civil engineering, for more specific enquires about skills or behaviours or about one course or level at one institution. A specific focus, with a deeper exploration of Korean students' needs in English, would provide additional guidance for EAP teachers to help students in their particular contexts of learning. For example, a qualitative case study could enquire how globalization and multicultural environments have impinged on students' academic practices, needs and attitudes in a local setting, and how EAP programmes help those learners to manage their needs.

However, this broadly-scoped study is justified by the fact that learners' needs are not limited by clear-cut boundaries, as needs are often a complicated mixture which results from diverse sources in learners' individual, institutional and sociocultural dimensions (Dudley-Evans & St. John, 1998). In particular, in this fast changing world of globalization, engineers travel and connect with people around the world, and their needs may encompass various perspectives gained in wider contexts. Therefore the broadly focused perspectives in two seemingly different contexts may provide invaluable and informative insights for EAP teachers on students' needs, and suggest desirable directions of English education for particular groups of L2

learners in the era of globalization. Achieving this may eventually allow EAP teachers to understand broadly the places in which we are living and sharing our interests and purposes.

More studies on non-native students in other subject areas, such as social science and humanities, might be conducted and the findings compared with those in this study. Such would provide additional understanding about L2 students' needs in English for particular disciplines in the era of globalization. A needs analysis such as this study, which attempts to triangulate the needs of various participants in different social contexts, also raises methodological issues for the interpretation of data; for example, how needs can be deduced when informants appear to hold different perceptions of their needs in English. Researchers' in-depth speculation, insights and flexibility may be necessary in dealing with the data.

Within the broad scope and understanding of the future direction of EAP programmes which are supported by the findings of this study, EAP teachers can answer specific enquiries as they occur in each classroom setting on the basis of their own in-depth qualitative studies: how to fulfil students' multi-skills and academic literacies, how to facilitate students' critical awareness in the classroom, and how to develop students' flexibility in problem-solving processes in real-life situations. Although it is hoped that this study offers a thought-provoking needs analysis, questions about how EAP teachers can meet the needs of Korean engineering students with a precisely tuned approach in particular contexts remain to be answered.

9.5. Conclusion

The fast-paced impact of globalization creates new needs, newly designed needs analyses and newly configured EAP programmes. Globalization has brought to L2 students in the local areas new possibilities and aspirations to participate in global academic practices; at the same time, this social phenomenon has created identity crises, fear, anxiety, discouragement and frustrations among students, because of

the newly formulated expectations and demands on them as global citizens. Although I, as an English teacher, started this study for pragmatic reasons, I came to realize that Korean engineering students require ideological understanding in order to enquire into power systems and to emancipate themselves in the global academic community. This realization called for extended understandings of students' needs, with a wider scope.

In an assay to compare the needs for a particular group of L2 students in both the Western academic context and their home country, I mapped the territory of EAP and needs analysis in a different way from other previous studies. This study has offered a comprehensive view of EAP and needs analysis that brings together theories of literacy and of sociocultural behaviours, with special reference to the engineering academic context. It also does not reject the concept of skills but it re-conceptualises them and places them in a wider context of current literacy issues (Lea & Street, 2000) in relation to globalization. The aspect of overall needs in view of globalization has not yet received sufficient attention in EAP research. The information in this study may contribute to the field of needs analysis which is at the centre of EAP research. Its findings may provide useful directions for EAP theory and pedagogy, formulating better EAP teaching curricula and evaluation tools for the present and future academic achievement and international communication of students.

In particular, this research focused on the perceptions not only of engineering lecturers but also of students, to incorporate their psychological concerns which interrogate the existing target situations in the community. Whereas EAP has tended to take an uncritical stance towards target situations (Dudley-Evans & St. John 1998), identifying participants' perceptions seemed to be an initial step towards questioning critically the existing social and institutional practices and learning more about what an appropriate EAP curriculum for L2 engineering students should be like in the global age. After taking such a step, EAP practitioners may be in a better position to formulate new strategies, skills and sociocultural behaviours for L2 engineering students. All of these efforts may increase our ability

to better prepare L2 engineering students for eventual efficient and equitable participation and communication in the global academic community.

Additionally, this comparative research in two apparently diverse contexts in institutional circumstances and educational values has provided important clues for assessing the extent and the effects of globalisation in engineering academic sectors, as reflected in the perceptions of engineering academics concerning the use of English, skills and cultural dimensions. Recognizing English as an international language of engineering (Tardy, 2004; Wood, 2001), this thesis articulated insights about the roles of English and needs for it in engineering in the context of globalization. This comparative research may also suggest that EAP practitioners who are interested in developing students' skills and sociocultural behaviours "can learn from and contribute to" each other in other contexts, "to provide an exchange of information" cross-culturally (Ganobcsik-Williams, 2006:xxiv).

My aim, to offer a broad view by pursuing the perceived needs for learners, rather than narrowly focusing on a specific view of needs, seems to have been achieved through this research project. This has been done mainly by means of flexibly designing research methods and collecting and analysing data to suit the wider framework of comparative speculations (cf. section 5.4.3). The approach used in the present study may thus have contributed to the methodological aspects of EAP research.

There is a further sense in which this study has had a positive outcome. During the process of modernization and globalization in Korea, influenced by Western norms throughout the country's history of academic development, there have barely been studies examining the perceptions of Korean students (Lee, 2007). In this study, how globalization has affected individual engineering academics' perceptions and what dilemmas they have had related to English as an international language were highlighted from their own voices. As this study started from the requirement for internationally communicative personnel as well as for appropriate EAP programmes in the Korean context, the findings may provide EAP teachers with an important indicator to project future directions of desirable teaching and learning

English for Korean engineering students.

By way of conclusion, globalization has resulted in new hopes for L2 students and diverse challenges to them in their academic contexts. EAP research which theorizes students' extended social, cognitive and literacy needs may help students to meet the academic, communicative and social tasks in the global milieu. EAP pedagogy critically and flexibly tuned to the students' needs could provide a unique route for enabling L2 students to identify themselves as effective and critical citizens in the international academic community.

Appendix I: Profiles of Questionnaire and Interview Participants

Table I. **Profile of KS Questionnaire Respondents (N=156)**

Characteristics		n	%
Engineering academic area	Chemical	44	28.2
	Mechanical	33	21.2
	Material	31	19.9
	Electronic & Electrical	26	16.7
	Constructive & Environmental (Civil)	15	9.62
	Nucleic & Quantum	7	4.49
Course level	M.Sc.	73	46.8
	Ph.D.	80	51.3
	Post Doc	3	1.92
Length of stay in foreign countries	None	94	60.3
	Under 1 year	55	35.3
	1 years-	4	2.56
	2 years-	0	0.00
	3 years-	2	1.28
	4 years-	0	0.00
	5 years-	1	0.64
	6 years-	0	0.00

Table II. **Profile of Interviewed KSs (N=21)**

Code	Engineering Subject	Course Level	Length of Stay in Foreign Countries
KS-1	Material	Ph.D.	-
KS-2	Chemical	Ph.D.	-
KS-3	Mechanical	M.Sc.	-
KS-4	Mechanical	Ph.D.	-
KS-5	Mechanical	M.Sc.	-
KS-6	Mechanical	Ph.D.	Japan 1 wk
KS-7	Mechanical	Ph.D.	-
KS-8	Mechanical	Ph.D.	-
KS-9	Chemical	M.Sc.	Australia 7 mths
KS-10	Material	M.Sc.	-
KS-11	Material	Ph.D.	-
KS-12	Civil	Ph.D.	America 3wks, Singapore 3wks
KS-13	Civil	Post Doc	America 2 mths, Canada 6mths
KS-14	Civil	M.Sc.	-
KS-15	Electronic & Electrical	M.Sc.	-
KS-16	Electronic & Electrical	Ph.D.	USA 2 yrs, Italy 1 yr
KS-17	Material	Ph.D.	-
KS-18	Material	Ph.D.	-
KS-19	Chemical	M.Sc.	USA 8mths
KS-20	Chemical	M.Sc.	-
KS-21	Chemical	M.Sc.	-

NB. To differentiate M.Sc., Ph.D., and Post Doctor levels in analyzing interview data, I put letters M, P or PD after the students' codes. Ex. KS-1P, KS-3M.

Table III. Profile of KL Questionnaire Respondents (N=34)

Characteristics		N	%
Engineering Academic area	Aerospace	10*	29.4
	Mechanical	9	26.5
	Industrial	3	8.82
	Constructive & Environmental (Civil)	3	8.82
	Material	1	2.94
	Nucleic & Quantum	5	14.7
	Chemical	3	8.82
Course level	M.Sc.	33**	97.1
	Ph.D.	31	91.2
	Post Doc	22	64.7
Years of teaching at College K	Under 1 year	1	2.94
	1 years-	3	8.82
	2 years-	2	5.88
	5 years-	2	5.88
	7 years-	3	8.82
	10 years-	2	5.88
	12 years-	4	11.8
	15 years-	6	17.6
	20 years-	11	32.4
	30 years-	0	0.00

NB. *One KL questionnaire respondent in Aerospace department is from India.
NB. ** Since the lecturers ticked repetitively all the course levels they had supervised or taught, the total number of course levels exceeds the population.

Table IV. Profile of Interviewed KLs (N=14)

Code	Engineering Subject	Course Level	Lecturing Experience		
			In Korea	Outside Korea	Total
KL-1	Mechanical	M.Sc., Ph.D., Post Doc	19 yrs	US 8 yrs	27 yrs
KL-2	Mechanical	M.Sc., Ph.D.	16 yrs	-	16 yrs
KL-3	Mechanical	M.Sc., Ph.D.	21 yrs	-	21 yrs
KL-4	Mechanical	M.Sc., Ph.D.	6 yrs	-	6 yrs
KL-5	Mechanical	M.Sc., Ph.D., Post Doc	19 yrs	-	19 yrs
KL-6	Mechanical	M.Sc., Ph.D.	16 yrs	-	16 yrs
KL-7	Mechanical	M.Sc., Ph.D., Post Doc	20 yrs	-	20 yrs
KL-8	Aeronautics	M.Sc., Ph.D., Post Doc	21 yrs	-	21 yrs
KL-9	Aeronautics	M.Sc., Ph.D., Post Doc	21 yrs	-	21 yrs
KL-10	Aeronautics	M.Sc., Ph.D., Post Doc	12 yrs	-	12 yrs
KL-11	Aeronautics	M.Sc., Ph.D., Post Doc	19 yrs	-	19 yrs
KL-12	Aeronautics	M.Sc.	1 yr	-	1 yr
KL-13	Mechanical	M.Sc., Ph.D.	12 yrs	-	12 yrs
KL-14	Mechanical	M.Sc., Ph.D., Post Doc	22 yrs	-	22 yrs

Table V. **Profile of US Questionnaire Respondents (N=16)**

Characteristics		N	%
Engineering academic area	Electronic	5	31.3
	Mechanical	5	31.3
	Constructive & Environmental (Civil)	3	18.8
	Composite Centre (Material)	1	6.25
	Aeronautics	1	6.25
	Computing	1	6.25
Course level	M.Sc.	3	18.8
	Ph.D.	10	62.5
	Post Doc	3	18.8
Length of stay in foreign countries, including the UK	Under 1 year	1	6.25
	1 years-	0	0.00
	2 years-	4	25.0
	4 years-	2	12.5
	6 years-	3	18.8
	8 years-	1	6.25
	10 years-	2	12.5
	14 years-	3	18.8

Table VI. **Profile of Interviewed USs (N=15)**

Code	Engineering Subject	Course Level	Length of stay in foreign countries (years)		
			In the UK	Outside UK	Total
US-1	Civil	Ph.D.	3 yrs	-	3 yrs
US-2	Electronic	Post Doc	7 yrs	-	7 yrs
US-4	Civil	Ph.D.	2 yrs 3 mths	2 yrs	4 yrs 3 mths
US-5	Mechanical	Ph.D.	15 yrs	-	15 yrs
US-6	Electronic	Ph.D.	2 yrs 10 mths	8 yrs 3 mths	11 yrs 1mths
US-7	Electronic	Ph.D.	1 yrs 10 mths	1 yrs	2 yrs 10mths
US-8	Mechanical	Ph.D.	10 yrs 6 mths	-	10 yrs 6 mths
US-9	Material	M.Sc.	3 yrs 10 mths	11 yrs 6 mths	14 yrs 4 mths
US-10	Aeronautics	Post Doc	2 yrs 6 mths	4 yrs	6 yrs 6 mths
US-11	Electronic	Ph.D.	2 yrs 4 mths	-	2 yrs 4 mths
US-12	Electronic	Ph.D.	6 mths	-	6 mths
US-13	Mechanical	Ph.D.	7 yrs 7 mths	-	7 yrs 7 mths
US-14	Mechanical	M.Sc.	5 yrs 2 mths	4 mths	5 yrs 6 mths
US-15	Mechanical	M.Sc.	3 yrs 4 mths	6 yrs 6 mths	9 yrs 10mths
US-16	Computing	Post Doc	4 yrs 6 mths	10 yrs	14yrs 6 mths

NB. US-3 did not participate in interview survey. To differentiate M.Sc., Ph.D., and Post Doctoral levels in analyzing interview data, I put letters M, P or PD after the students' codes. Ex. US-1P, US-2PD.

Table VII. Profile of UL Questionnaire Respondents (N=15)

Characteristics		N	%
Engineering Academic area	Mechanical	5	33.3
	Composite Centre (Material)	3	20.0
	Constructive & Environmental (Civil)	2	13.3
	Electrical & Electronic	2	13.3
	Chemical	2	13.3
	Bioengineering	1	6.67
Course level	M.Sc.	9*	60.0
	Ph.D.	8	53.3
	Post Doc	2	13.3
Years of experience with Korean students	Under 2 years	0	0.00
	2 years-	7	46.7
	5 years-	3	20.0
	7 years-	0	0.00
	12 years-	2	13.3
	15 years-	2	13.3
	20 years-	1	6.67

NB. * Since the lecturers ticked repetitively all the course levels they had supervised or taught, the total number of course levels exceeds the population.

Table VIII. Profile of Interviewed ULs (N=5)

Code	Engineering subject	Nationality	Course Level	Lecturing experience with Korean students		
				In the UK	Outside UK	Total
UL-1	Mechanical	Spanish	Ph.D., M.Sc.	4 yrs	-	4 yrs
UL-2	Mechanical	British	M.Sc.	3 yrs	-	3 yrs
UL-3	Mechanical	British	Ph.D.	5 yrs	-	5 yrs
UL-4	Mechanical	Indian	Ph.D., M.Sc.	3 yrs	-	3 yrs
UL-5	Materials	British	Ph.D.	4 yrs	-	4 yrs

Appendix II: Questionnaire for Students in Korea [English Version]

Academic Needs Questionnaire

Please complete this questionnaire which is going to help in a research about **Academic Needs in English** of **Korean postgraduate engineering students.**
Please tick (✔) one box/ boxes in each section or write words/ sentences as appropriate.

A. General Information

1. (Name):

2. Institution:

3. Department:

4. Course you are taking:

MSc / MEng course	☐
MPhil / PhD course	☐
Post Doc	☐

5. If you have any experience of living in foreign countries, please write the names of the countries and the periods of stay.

6. How important do you think English is to your current study?

Critically important	☐
Fairly important	☐
Rarely important	☐
Not at all important	☐

6-1. Please give reasons for your answer.

B. Language Skills/ Study Skills

7. Of the four major language skills, which are the most important **for your success in your engineering study**? *(Please rank them in the order of 1~4.* ***4: the most important, 1: the least important****.)*

Reading ☐
Writing ☐
Speaking ☐
Listening ☐

7-1. Please give reasons for your answer.

8-1. Of the following study situations/activities, please mark under the appropriate heading of where you should use the English language or communicate in English. If there are other occasions you need to use English in relation to your study, please write down the situation in the blank.

Lectures/ Talks ( )
Seminars/ Conferences ( )
Tutorials/ Supervision ( )
Practicals/ Laboratory work/ Field Work ( )
Private study/ Reading literature ( )
Searching references/ Library use ( )
Writing thesis/ Reports/ Thesis/ Research papers ( )
Research ( )
Written Examinations ( )
Oral Examinations ( )
Others .....

8. For each of the following **study skills**, please mark under the appropriate heading depending on **how important** you think they are in your study of engineering. Tick (✓) the appropriate box according to the scale. **Please leave blanks** if the study skill is not related to the use of English in your situation.

Study Situations	Study Skills Needed	Critically Important	Fairly Important	Rarely Important	Not at all Important
1. Lectures/ Talks	1.Listening and understanding				
	2.Note-taking				
	3.Asking questions for repetition, clarification and information				

Study Situations	Study Skills Needed	Critically Important	Fairly Important	Rarely Important	Not at all Important
2.Seminars/ Conferences	1. Listening and understanding				
	2. Presenting own works				
	3. Asking questions				
	4.Answering questions; explaining				
	5.Organizing whole discussion or activity				
	6.Note-taking				
	7.Taking part in Debates				
3.Tutorials/ Supervisions	1. Listening and Understanding				
	2. Speaking with(out) notes: Reporting orally				
	3. Note-taking				
	4.Asking Questions				
	5.Answering Questions; Explaining				
	6.Taking part in debates				
	7.Personal meetings with supervisors				
4.Practicals/ Laboratory work/ Field work	1.Understanding Instructions				
	2.Asking Questions and Requesting help				
	3.Recording Results				
	4.Reading and Understanding Manuals.				
5.Private Study/ Reading Literature	1.Reading efficiently: Comprehension and Speed.				
	2.Understanding and Analyzing Graphs, Diagrams, etc.				
	3.Note-taking and Summarizing				
6.Reference Material/ Library Use	1.Using the Contents / Index Pages				
	2.Using a Dictionary Efficiently				
	3.Using a Library Catalogue on Cards, Microfiche and Computer				
	4.Finding Information Quickly				
	5.Collecting Information				
7.Writing Essays/ Reports/ Dissertations/ Thesis/ Research papers	1.Making a Topic Decision				
	2.Outlining Chapters				
	3. Planning, Writing drafts, Revising				
	4.Summarizing, Paraphrasing and Synthesizing				
	5.Continuous writing in an academic style				
	6.Organizing Information Logically				
	7.Using Quotations, Footnotes, Bibliography				
	8.Using Charts, Tables and Diagrams				
	9. Drawing Conclusions				
	10.Plagiarism Avoidance				
	11.Connection and Transition of Sentences				
8. Research	1.Using social Net Works and Resources				
	2.Undertaking Surveys				
9.Written Exams	1.Preparing for Examinations				
	2.Understanding Questions / Instructions				
	3.Writing Quickly: Pressure of Time				

Study Situations	Study Skills Needed	Critically Important	Fairly Important	Rarely Important	Not at all Important
10.Oral Exams	1.Answering Questions: Explicitly, Precisely				
	2.Explaining, Describing, Justifying				
11.Generally Applicable Skills	1.Logical Thinking: Constructing Arguments				
	2.Accuracy; Stating Problems clearly; Making their own Opinions or Claims clearly				
	3.Memory: Recall				
	4.Using Computers				
	5.Subject Specific Terminology				
	6.Frammar and Expression				
	7.Pronuncation				

8-2. Are there any other comments that might be helpful in assessing what **study skills** you need in general and **what specific difficulties** you encounter in engineering academic situations?

C. Impact of Different Academic Cultures

9. Do you think the academic cultures are **different** between Korea and English speaking countries in studying engineering? Please give the reasons for your answer.

10. If you have had any **problems** because of the differences of academic cultures of Korea and English speaking countries, please describe them.

D. Specific English Programmes

11. Do you think English courses at your university have been/ were beneficial to you for your engineering study?

Very much ☐

Fairly ☐

Rarely ☐

Not at all ☐

11-1. Please describe the reasons for your answer.

11-2. Have you ever taken part in any organized learning activity to develop these language skills/ study skills in English and cross-cultural understandings in relation to your study? Please describe it. (e.g. Academic writing courses in Korea, engineering-specific English courses in the US)

12. Do you think that a specific English programme to improve academic or engineering-specific English at university level would be helpful for your engineering study?

Very much ☐

Fairly ☐

Rarely ☐

Not at all ☐

13. If you selected *very much* or *fairly* in question 12, which English curriculum do you perceive would be the best for you **at university level in Korea**?

Please fill in the table given with appropriate numbers depending on three following possible programmes. You do not need to include all three programmes. You can choose more than one programme for each level, or can also leave blanks if it is unnecessary.

English Programmes

(1) General English: Grammar, Pronunciation, General Communication skills, etc..

(2) General Academic English: General Academic Skills such as Presentation, Thesis Writing, Textbook Reading, etc..

(3) Specific Academic English: Concept of Engineering Subject Terminology, Disciplinary convention, etc..

UG	Year 1	
	Year 2	
	Year 3	
	Year 4	
PG	MSci / MEng	
	MPhil / PhD	

13-1. Please give reasons for your answer.

Appendix II: Questionnaire for Students in Korea [Korean Version]

공학의 학문적 연구를 위한 영어의 필요설문
Academic Needs Analysis Questionnaire

다음 설문지는 **공학 계열**을 공부하거나 연구하는 대학원이상의 학생들의 **공학 학문 영역**에서의 **영어의 필요성**에 관한 연구를 위한 것입니다. 모든 기입내용은 **본 연구의 목적만을** 위하여 성실히 사용될 것이며, 자신의 **현재의 학문적 연구 상황에 제한하여** 다음 설문에 답하여 주시면 감사하겠습니다.

A. 일반정보

1. (성명) :
2. 연구기관 혹은 대학 :
3. 학과 및 계열 :
4. 과정 :
   석사과정(MSc / MEng) ( )
   박사과정(MPhil / PhD) ( )
   Post Doc ( )
5. 외국에서 체류하였던 경험이 있었다면, 체류하였던 국가 명과 체류기간을 적어주십시오.

6. **현재의** 당신의 **공학 학문 활동에** 얼마만큼 영어가 중요하다고 보십니까?

   매우 중요( ) 중요( ) 약간 중요( ) 중요치 않음( )

6-1. 위의 답변에 대한 이유를 적어 주십시오.

B. 언어 및 학습 능력

7. 다음 네 가지 영어의 **언어 능력(Language Skills)**이 당신의 **현재의 공학연구를 위하여** 중요한 정도에 따라 다음 공란에 순서대로 번호를 적으십시오(1~4). (가장 중요한 것: 4, 가장 덜 중요한 것: 1)

   읽기능력 (Reading skill) ( )
   쓰기능력 (Writing skill) ( )
   말하기능력 (Speaking skill) ( )
   듣기능력 (Listening skill) ( )

7-1. 위의 답변에 대하여 이유를 적어 주십시오.

8-1. 다음 공학계의 학문 연구를 위하여 필요한 **학습 및 연구 상황** 중에서, **현재 자신이 영어를 이용하거나 영어로 의사 소통하여야 하는 상황을** 모두 골라 표시(√)하고, 그 밖에 영어를 사용하여야 하는 상황이 있으면 기타의 난에 적어 주십시오.

강의 ( )
세미나/ 학술 대회 ( )
지도 교수와의 면담 ( )
실험 및 실습 ( )
개인 별 학습 ( )
도서실 이용 및 참고 자료 조사 ( )
에세이/ 논문/ 보고서 쓰기 ( )
조사 연구 (Survey) ( )
필기 시험 ( )
구두 시험 ( )
기타 상황.....

8.다음은 공학계의 각 학문 연구 상황에 필요한 **학습 능력 (Study Skills)**을 기술한 것입니다. **영어를 매체로 한 경우에 한하여** 다음의 학습능력이 당신의 **현재의 학습 상황에서** 얼마나 필요한지 중요도를 판단하여 다음 해당 난에 표시(√)하여 주십시오. **영어의 사용과 전혀 무관한 경우에는 빈 공란**으로 남겨 두십시오.

학습상황	영어를 매체로 할 때의 학습능력	매우 중요	중요	약간 중요	중요치 않음
1.강의 (Lecture)	1.듣기와 이해				
	2.노트적기				
	3.질문하기				
2. 세미나 / 학술대회 (Seminar/ Conference)	1.듣기와 이해				
	2.구두발표하기				
	3.질문하기				
	4.질문에 답변하기				
	5.전체토론이나 활동 주관하기				
	6.노트 하기				
	7.토론에 참여하기				

학습상황	영어를 매체로 할 때의 학습능력	매우 중요	중요	약간 중요	중요치 않음
3. 지도 교수와의 면담 (Tutorial/ Supervision)	1.듣기와 이해하기				
	2.구두 보고				
	3.노트 하기				
	4.질문 하기				
	5.질문에 답변하기				
	6.토론에 참여하기				
	7.지도교수와의 개인적인 관계				
4. 실험실습 및 현장 작업 (Practicum/ Laboratory/ Field work)	1.지시사항 이해하기				
	2.질문하기와 도움을 청하기				
	3.결과 기록하기				
	4.기구조작법 읽고 이해하기				
5.개인별 학습 및 문헌읽기	1.속독 및 정독				
	2.그래프, 도표 이해하고 분석하기				
	3.노트정리 및 요약하기				
6. 도서실 이용 및 참고자료 사용 (Reference/ Library Use)	1.목차 및 색인표 사용하기				
	2.사전의 사용				
	3.도서관 분류표로 자료찾기				
	4.참고자료 빨리 찾기				
	5.자료수집				
7. 에세이 / 논문 / 보고서 쓰기 (Writing Essays/ Reports/ Thesis/ Research papers)	1.주제 선정하기				
	2.Chapter 구성하기				
	3.초안 작성하고 재검토하기				
	4.내용요약과 합성 및 재기술				
	5.학문적인 문체로 쓰기				
	6.정보를 논리적으로 배열하기				
	7.인용이나 참고도서 사용하기				
	8.Chart, Table, Diagram 등 이용하기				
	9.결론 도출하기				
	10.표절 방지				
	11.글의 연결 및 전환				
8.조사연구 (Research)	1.사회정보망과 자원이용하기				
	2.Survey 하기(설문, 인터뷰)				
9.필기시험 (Written Examiniations)	1.시험준비하기				
	2.질문이해하기				
	3.정해진 시간 내 답안지 작성하기				

학습상황	영어를 매체로 할 때의 학습능력	매우 중요	중요	약간 중요	중요치 않음
10.구두시험 (Oral Examinations)	1.분명하고 확실하게 답변하기				
	2.설명과 기술 및 주장하기				
11. 일반 적용 능력 (Generally Applicable Skills)	1.논리적으로 생각하고 논의 세우기				
	2.문제를 정확히 진술하고 자신의 의견을 분명히 표현하기				
	3.기억력				
	4.컴퓨터사용하기				
	5.전공전문용어				
	6.영어문법과 표현				
	7.영어발음				

8-2. 기타 공학을 학습 및 연구함에 있어서, 자신에게 필요하거나 문제시되는 영어와 관련된 학습상황과 학습능력 (Study Skills)을 기술하여 주십시오.

C. 학습 문화의 차이에 의한 요인

한국 공학 학생들이 **영어를 매체로 하여** 공학공부 및 연구를 할 경우에 [예: 영어 전공서적 읽기, 혹은 원어민과 함께 세미나 참여], **매체가 되는 서양의 영어권 학습문화**가 **자신의 한국적 학습문화**와 다름에 따른 영향을 알고자 합니다.

9. 공학을 함에 있어서 **영어권의 학습문화**와 **당신의 한국적 학습문화** 사이에 **차이**가 크다고 생각하십니까? 답변에 대한 이유를 설명하여 주십시오.

10. **영미권의 학습문화**와 **당신의 한국적 학습문화**의 **차이**로 인하여, 공학연구를 함에 있어서 문제점이나 어려운 점이 있다면 간단히 기술하여 주십시오.

D. 영어교육에 대한 의견

11. 당신은 현재까지의 대학 영어 교육이 당신의 공학 학문활동에 얼마만큼 도움을 주어 왔다고 생각하십니까?

많이 ( ) 보통 ( ) 약간 ( ) 전혀 도움이 안됨 ( )

11-1. 위의 답변에 대한 이유를 설명하여 주십시오.

12. 현재나 미래의 학문적 활동을 위해 **특별히 공학 학생**을 위한 **영어 (Academic English) 교육** 이 귀하의 대학에서 행하여 진다면 당신의 공학 학문 연구에 도움이 될 것이라고 생각합니까?

많이 ( ) 보통 ( ) 약간 ( ) 전혀 도움이 안됨 ( )

13. 영어교육은

(1) **일반을 위한 영어(General English)교육** - 문법, 발음, 일상영어회화등.

(2) **일반적인 학문활동을 위한 영어(General Academic English)교육** - Presentation, 논문 작성법, Textbook 읽기등.

(3) **특수전공학문을 위한 영어(Specific Academic English)교육** – 공학전문용어, 공학과의 통념이나 관념 등으로 나누어 생각할 수 있습니다.

공학 학생 및 연구자의 필요를 위하여 대학에서의 학업기간 중에 어떠한 영어 교육을 받는 것이 타당하다고 생각하는지 다음표의 공란에 적당한 교육에 해당하는 위의 번호 [(1), (2), (3)]를 적어 완성하여 주십시오.

위의 세가지 항이 모두 필요 없는 경우에는 공란으로 남겨 두어도 무방하며, 필요한 경우에는 두 가지, 혹은 세 가지 항을 포함할 수도 있습니다.

UG	학부과정(BS) 1 학년	
	학부과정(BS) 2 학년	
	학부과정(BS) 3 학년	
	학부과정(BS) 4 학년	
PG	석사과정(MS/MEng)	
	박사과정(MPhil/PhD)	

13-1. 위의 답변에 대한 이유를 적어 주십시오.

Appendix III: Questionnaire for Lecturers in Korea [English Version]

Academic Needs Questionnaire

Please complete this questionnaire which is going to help in a research about **Academic Needs in English** of **Korean postgraduate engineering students.**

Please tick (✔) one box/ boxes in each section or write words/ sentences as appropriate.

A. General Information

1. (Name):

2. Institution:

3. Department:

4. Which courses of Korean engineering students have you supervised or had any relationships with for academic reasons?

MSci / MEng course	☐
MPhil / PhD course	☐
Post Doc	☐

5. How long have you supervised or had relationships with Korean engineering students?

6. How important do you think English is to your Korean students in supervising or teaching them?

Critical important	☐
Fairly important	☐
Rarely important	☐
Not at all important	☐

6-1. Please give reasons for your answer.

B. Language Skills/ Study Skills

7. Of the four major language skills, which are the most important **for your postgraduate level Korean students to succeed in their engineering studies**? *(Please rank them in the order of 1~4. **4: the most important, 1: the least important)***

Reading ☐
Writing ☐
Speaking ☐
Listening ☐

7-1. Please give reasons for your answer.

8-1. Of the following study situations/activities, please mark under the appropriate headings where students should use **English** or communicate in English. If there are other occasions for students to use English in relation to their study, please write them down in the blank.

Lectures/ Talks ( )
Seminars/ Conference ( )
Tutorials/ Supervision ( )
Practicals/ Laboratory work/ Field Work ( )
Private study/ Reading literature ( )
Searching references/ Library use ( )
Writing Thesis/ Reports/ Research papers ( )
Research ( )
Written Examinations ( )
Oral Examinations ( )
Others .....

8. For each of the following **study skills** in relation to study situations/ activities, please mark under the appropriate headings depending on **how important** you think they are for students to study engineering. Tick (✓) in the appropriate box according to the scale. Please **leave blanks** if the study skills are not related to students' use of English.

Study Situations	Study Skills Needed	Critically Important	Fairly Important	Rarely Important	Not at all Important
1. Lectures/ Talks	1.Listening and understanding				
	2.Note-taking				
	3.Asking questions for repetition, clarification and information				

Study Situations	Study Skills Needed	Critically Important	Fairly Important	Rarely Important	Not at all Important
2.Seminars/ Conferences	1. Listening and understanding				
	2. Presenting own works				
	3. Asking questions				
	4.Answering questions; explaining				
	5.Organizing whole discussion or activity				
	6.Note-taking				
	7.Taking part in Debates				
3.Tutorial/ Supervisions	1. Listening and Understanding				
	2. Speaking with(out) notes: Reporting orally				
	3. Note-taking				
	4.Asking Questions				
	5.Answering Questions; Explaining				
	6.Taking part in debates				
	7.Personal meetings with supervisors				
4.Practicum/ Laboratory work/ Field work	1.Understanding Instructions				
	2.Asking Questions and Requesting help				
	3.Recording Results				
	4.Reading and Understanding Manuals.				
5. Private Study/ Reading Literature	1.Reading efficiently: Comprehension and Speed.				
	2.Understanding and Analyzing Graphs, Diagrams, etc.				
	3.Note-taking and Summarizing				
6.Referenc e Material/ Library Use	1.Using the Contents / Index Pages				
	2.Using a Dictionary Efficiently				
	3.Using a Library Catalogue on Cards, Microfiche and Computer				
	4.Finding Information Quickly				
	5.Collecting Information				
7.Writing Essays/ Reports/ Projects/ Dissertations / Thesis/ Research papers	1.Making a Topic Decision				
	2.Outlining Chapters				
	3. Planning, Writing drafts, Revising				
	4.Summarizing, Paraphrasing and Synthesizing				
	5.Continuous writing in an academic style				
	6.Organizing Information Logically				
	7.Using Quotations, Footnotes, Bibliography				
	8.Using Charts, Tables and Diagrams				
	9. Drawing Conclusions				
	10.Plagiarism Avoidance				
	11.Connection and Transition of Sentences				
8. Research	1.Using social Net Works and Resources				
	2.Undertaking Surveys				
9.Written Exams	1.Preparing for Examinations				
	2.Understanding Questions / Instructions				
	3.Writing Quickly: Pressure of Time				

Study Situations	Study Skills Needed	Critically Important	Fairly Important	Rarely Important	Not at all Important
10.Oral Exams	1.Answering Questions: Explicitly, Precisely				
	2.Explaining, Describing, Justifying				
11.Generally Applicable Skills	1.Logical Thinking: Constructing Arguments				
	2.Accuracy; Stating Problems clearly; Making their own Opinions or Claims clearly				
	3.Memory: Recall				
	4.Using Computers				
	5.Subject Specific Terminology				
	6.Frammar and Expression				
	7.Pronuncation				

8-2. Are there any other comments that might be helpful in assessing what **study skills** Korean engineering students need in general and what specific difficulties they encounter in engineering academic situations?

C. Impact of Different Academic Cultures

9. Do you think academic cultures are **different** between Korea and western English speaking countries in academic contexts? Please give the reasons for your answer.

10. Please describe any **problems** Korean engineering students would experience because of the **differences of academic cultures** between Korea and western countries. Please give the reasons for your answer.

D. Specific English Programmes

11. Are you satisfied with the English level of Korean students in their engineering study?

Very much ☐

Fairly ☐

Rarely ☐

Not at all ☐

11-1. Please give reasons for your answer.

12. Do you think that a specific English programme to improve engineering academic English at university level would be helpful for students' engineering studies?

Very much	☐
Fairly	☐
Rarely	☐
Not at all	☐

13. Which English curriculum do you think would be the best for Korean engineering students **at university level in Korea**?

Please fill in the table given below with appropriate numbers depending on three following possible programmes. You need not include all three programmes. You can choose more than one programme for each level, or can also leave blanks if it is unnecessary.

English Programmes

(1) General English: Grammar, Pronunciation, General Communication skills, etc..

(2) General Academic English: General Academic Skills such as Presentation, Thesis Writing, Textbook Reading, etc..

(3) Specific Academic English: Concept of Engineering Subject Terminology, Disciplinary convention, etc..

UG	Year 1	
	Year 2	
	Year 3	
	Year 4	
PG	MSci / MEng	
	MPhil / PhD	

13-1. Please give reasons for your answer.

Appendix III: Questionnaire for Lecturers in Korea [Korean Version]

공학의 학문적 연구를 위한 영어의 필요설문
Academic Needs Analysis Questionnaire

다음 설문지는 **공학계열**을 공부하거나 연구하는 학생 및 연구원의 학문영역에서의 **영어의 필요성**에 관한 연구를 위한 것입니다. 현재 귀하의 연구기관에서 지도하시는 중에 느끼셨던 **대학원 학생 (석사학위 이상)**들의 영어의 필요사항이나 문제점에 대하여 다음의 질문에 답하여 주시면 감사하겠습니다. 모든 기입 내용은 **본 연구의 목적만을** 위하여 성실히 사용될 것입니다.

A. 일반정보

1. (성함) :
2. 연구기관 혹은 대학:
3. 학과 및 계열:

4. 다음의 어떤 과정에 있는 학생들을 지도하신 경험이 있으십니까?

석사과정(MSc / MEng)	( )
박사과정(MPhil / PhD)	( )
Post Doc	( )

5. 학생을 지도하신 경력을 간단히 기술하여 주십시오.

6. 현재 공학 학생들을 지도하시면서, 얼마만큼 **영어**가 **학생들의 공학 학업성취에** 중요하다고 보십니까?

매우 중요 ( ) 중요 ( ) 약간 중요 ( ) 중요치 않음 ( )

6-1. 위의 답변에 대한 이유를 적어 주십시오.

B. 언어 및 학습 능력

7. 다음 네가지 영어의 **언어 능력(Language Skills)**이 **학생들의 공학 연구 및 학업을 위하여** 중요한 정도에 따라 다음 공란에 순서대로 번호를 적으십시오 (1~4). *(가장 중요한 것: 4, 가장 덜 중요한 것: 1)*

읽기능력 (Reading skill)	( )
쓰기능력 (Writing skill)	( )
말하기능력 (Speaking skill)	( )
듣기능력 (Listening skill)	( )

7-1. 위의 답변에 대하여 이유를 간단히 설명하여 주십시오.

8-1. 다음 공학계의 학문 연구를 위해 필요한 **학습 및 연구 상황** 중에서, **대학원 학생들**이 **영어를 이용하거나 영어로 의사 소통하여야 하는 상황**을 모두 골라 표시하여 주십시오. 그 밖의 영어를 사용하여야 하는 상황이 있으면 기타의 난에 적에 적어 주십시오.

강의 ( )
세미나/ 학술대회 ( )
지도교수와의 면담 ( )
실험 및 실습 ( )
개인별 학습 및 문헌 읽기 ( )
도서실 사용 및 참고 자료 조사 ( )
에세이/ 논문/ 보고서 쓰기 ( )
조사연구(Survey) ( )
필기 시험 ( )
구두 시험 ( )
기타 .....

8. 다음은 학문 연구 상황에 필요한 **학습 능력 (Study Skills)**을 정리한 것입니다. **영어를 매체로 한 경우에 한하여**, 다음의 학습능력이 공학을 공부함에 있어서 **학생들에게 얼마나 필요한지 중요도를 판단하시어** 다음 해당 난에 표시하여 주십시오. **영어의 사용과 전혀 무관한 경우에는 빈 공란**으로 남겨 두십시오.

학습상황	영어를 매체로 할 때의 학습능력	매우 중요	중요	약간 중요	중요치 않음
1.강의 (Lecture)	1.듣기와 이해				
	2.노트적기				
	3.질문하기				
2. 세미나 / 학술대회 (Seminar/ Conference)	1.듣기와 이해				
	2.구두발표하기				
	3.질문하기				
	4.질문에 답변하기				
	5.전체토론이나 활동 주관하기				
	6.노트 하기				
	7.토론에 참여하기				

학습상황	영어를 매체로 할 때의 학습능력	매우 중요	중요	약간 중요	중요치 않음
3. 지도 교수와의 면담 (Tutorial/ Supervision)	1.듣기와 이해하기				
	2.구두 보고				
	3.노트 하기				
	4.질문 하기				
	5.질문에 답변하기				
	6.토론에 참여하기				
	7.지도교수와의 개인적인 관계				
4. 실험실습 및 현장 작업 (Practicals / Laboratory work / Field work)	1.지시사항 이해하기				
	2.질문하기와 도움을 청하기				
	3.결과 기록하기				
	4.기구조작법 읽고 이해하기				
5.개인별 학습 및 문헌읽기 (Private Study/ Reading)	1.속독 및 정독				
	2.그래프, 도표 이해하고 분석하기				
	3.노트정리 및 요약하기				
6. 도서실 이용 및 참고 자료 사용 (Reference / Library Use)	1.목차 및 색인표 사용하기				
	2.사전의 사용				
	3.도서관 분류표로 자료찾기				
	4.참고자료 빨리 찾기				
	5.자료수집				
7. 에세이 / 논문 / 보고서 쓰기 (Writing Essays/ Reports/ Thesis/ Research papers)	1.주제 선정하기				
	2.Chapter 구성하기				
	3.초안 작성하고 재검토하기				
	4.내용요약과 합성 및 재기술				
	5.학문적인 문체로 쓰기				
	6.정보를 논리적으로 배열하기				
	7.인용이나 참고도서 사용하기				
	8.Chart, Table, Diagram 등 이용하기				
	9.결론 도출하기				
	10.표절 방지				
	11.글의 연결 및 전환				
8.조사연구 (Research)	1.사회정보망과 자원이용하기				
	2.Survey 하기(설문, 인터뷰)				
9.필기시험 (Written Examiniations)	1.시험준비하기				
	2.질문이해하기				
	3.정해진 시간 내 답안지 작성하기				

학습상황	영어를 매체로 할 때의 학습능력	매우 중요	중요	약간 중요	중요치 않음
10.구두시험 (Oral Examinations)	1.분명하고 확실하게 답변하기				
	2.설명과 기술 및 주장하기				
11. 일반 적용 능력 (Generally Applicable Skills)	1.논리적으로 생각하고 논의 세우기				
	2.문제를 정확히 진술하고 자신의 의견을 분명히 표현하기				
	3.기억력				
	4.컴퓨터사용하기				
	5.전공전문용어				
	6.영어문법과 표현				
	7.영어발음				

8-2. 기타 공학을 학습 및 연구함에 있어서, 학생들에게 필요하거나 문제시되는 영어와 관련된 학습상황이나 학습능력 (Study Skills)을 기술하여 주십시오.

C. 학습 문화의 차이에 의한 요인

한국 공학계의 학생들이 **영어를 매체로 하여** 공학을 공부 및 연구 할 경우에 [예: 영어 전공 서적 읽기, 혹은 원어민과 함께 세미나 참여 등], **매체가 되는 서양의 영어권의 학습문화**가 **한국학생들의 한국적 학습문화**와 다름에 따른 영향을 알고자 합니다.

9. 공학을 함에 있어서 **영어권의 학습문화**와 **한국 학생들의 한국적 학습문화** 사이에 **차이**가 크다고 생각하십니까? 답변에 대한 이유를 설명하여 주십시오.

10. **영미권의 학습문화**와 **한국학생들의 한국적 학습문화**의 **차이**로 인하여, 공학지도를 함에 있어서 문제점이나 어려운 점이 있다면 간단히 기술하여 주십시오.

D. 영어교육에 대한 의견

11. 현재까지의 대학기관에서의 영어교육이 공학계열을 공부하는 학생들의 학문활동에 얼마만큼 도움을 주어 왔다고 생각하십니까?

많이 ( )　　보통 ( )　　약간 ( )　　전혀 도움이 안됨 ( )

11-1. 위의 답변에 대한 이유를 설명하여 주십시오.

12. 현재나 미래의 학문적 활동을 위해 **특별히 공학 학생**을 위한 **학문적 영어 (Academic English)** 교육이 대학에서 행하여 진다면 학생들의 공학 학문연구에 도움이 될 것이라고 생각합니까?

많이 ( )　　보통 ( )　　약간 ( )　　전혀 도움이 안됨 ( )

13. 영어교육은

(1) **일반적인 영어(General English)교육** - 문법, 발음, 일상회화 등.
(2) **일반적인 학문 활동을 위한 영어 (General Academic English)교육** - Presentation, Thesis Writing, Textbook Reading 등.
(3) **특수전공학문을 위한 영어(Specific Academic English)교육** - 공학전문용어, 학과의 관례 · 통념 등.

등으로 나누어 생각할 수 있습니다.
공학 학생 및 연구자의 필요를 위하여 대학에서의 학업기간 중에 어떠한 영어 교육을 받는 것이 타당하다고 생각하는지 다음표의 공란에 적당한 교육에 해당하는 위의 번호 [(1), (2), (3)]를 적어 완성하여 주십시오.

위의 세가지 항이 모두 필요 없는 경우에는 공란으로 남겨 두어도 무방하며, 필요한 경우에는 두가지, 혹은 세가지 항을 포함할 수도 있습니다.

학부과정 (BS)	1 학년	
	2 학년	
	3 학년	
	4 학년	
석사과정(MSc/ MEng)		
박사과정(MPhil/ PhD)		

13-1. 위의 답변에 대한 이유를 적어 주십시오.

Appendix IV: Questionnaire for Students in the UK

Academic Needs Questionnaire

Please complete this questionnaire, which is going to help in a research about **Academic Needs in English** of **Korean postgraduate engineering students.**
Please tick (✔) one box/ boxes in each section or write words/ sentences as appropriate.

A. General Information

1. (Name):

2. Institution:

3. Department:

4. Course you are taking:

MSci / MEng course ☐
MPhil / PhD course ☐
Post Doc ☐

5. How long have you been in the UK? : ___year(s)___month(s)

If you have any experience of living in foreign countries before coming here, please write the names of the countries and the periods of stay.

6. How important do you think English is to your current study?

Critically important ☐
Fairly important ☐
Rarely important ☐
Not at all important ☐

6-1. Please give reasons for your answer.

B. Language Skills/ Study Skills

7. Of the four major language skills, which are the most important **for your success in your engineering study**? *(Please rank them in the order of 1~4. **4: the most important, 1: the least important.**)*

Reading ☐
Writing ☐
Speaking ☐
Listening ☐

7-1. Please give reasons for your answer.

8. For each of the following **study skills** in relation to study situations/ activities, please mark under the appropriate heading depending on **how important** you think they are for your study. Tick (✔) in the appropriate box according to the scale.

Study situations	Study Skills Needed	Critically Important	Fairly Important	Rarely Important	Not at all Important
1. Lectures / Talks	1.Listening and understanding				
	2.Note-taking				
	3.Asking questions for repetition, clarification and information				
2.Seminars / Conferences	1. Listening and understanding				
	2. Presenting own works				
	3. Asking questions				
	4.Answering questions; explaining				
	5.Organizing whole discussion or activity				
	6.Note-taking				
	7.Taking part in Debates				
3.Tutorials / Supervisions	1. Listening and Understanding				
	2. Speaking with(out) notes: Reporting orally				
	3. Note-taking				
	4.Asking Questions				
	5.Answering Questions; Explaining				
	6.Taking part in debates				
	7.Personal meetings with supervisors				

Study situations	Study Skills Needed	Critically Important	Fairly Important	Rarely Important	Not at all Important
4.Practicals / Laboratory work / Field work	1.Understanding Instructions				
	2.Asking Questions and Requesting help				
	3.Recording Results				
	4.Reading and Understanding Manuals.				
5. Private Study / Reading Literature	1.Reading efficiently: Comprehension and Speed.				
	2.Understanding and Analyzing Graphs, Diagrams, etc.				
	3.Note-taking and Summarizing				
6.Reference Material / Library Use	1.Using the Contents / Index Pages				
	2.Using a Dictionary Efficiently				
	3.Using a Library Catalogue on Cards, Microfiche and Computer				
	4.Finding Information Quickly				
	5.Collecting Information				
7. Writing Essays / Reports / Projects / Dissertations/ Thesis / Research papers	1.Making a Topic Decision				
	2.Outlining Chapters				
	3. Planning, Writing drafts, Revising				
	4.Summarizing, Paraphrasing and Synthesizing				
	5.Continuous writing in an academic style				
	6.Organizing Information Logically				
	7.Using Quotations, Footnotes, Bibliography				
	8.Using Charts, Tables and Diagrams				
	9. Drawing Conclusions				
	10.Plagiarism Avoidance (표절방지)				
	11.Connection and Transition of Sentences				
8. Research	1.Using social Net Works and Resources				
	2.Undertaking Surveys				
9.Written Examinations	1.Preparing for Examinations				
	2.Understanding Questions / Instructions				
	3.Writing Quickly: Pressure of Time				
10.Oral Examinations	1.Answering Questions: Explicitly, Precisely				
	2.Explaining, Describing, Justifying				
11.Generally Applicable Skills	1.Logical Thinking: Constructing Arguments				
	2.Accuracy; Stating Problems clearly; Making their own Opinions or Claims clearly				
	3.Memory: Recall				
	4.Using Computers				
	5.Subject Specific Terminology (전문용어)				
	6.Frammar and Expression				
	7.Pronuncation				

8-2. Are there any other comments that might be helpful in assessing what **study skills** you need in general and what specific difficulties you encounter in engineering academic situations?

C. Impact of Different Academic Cultures

9. Do you think that the academic cultures of Korea and the UK are different in your engineering academic contexts? Please give reasons for your answer.

10. If you have had any problems because of the **different academic cultures** of Korea and the UK, please describe them.

D. Specific English Programmes

11. Do you think English courses at universities in Korea have been/ were beneficial to you for your engineering study?

Very much	☐
Fairly	☐
Rarely	☐
Not at all	☐

11-1. Please give reasons for your answer.

11-2. Have you ever taken part in any programmes to develop language skills/ study skills or cross-cultural understandings in relation to your study of engineering? Please describe them. (*e.g. pre-sessional course for 3 months in the UK, engineering specific English course in Korea)*

12. Do you think that a specific English programme to improve academic English at university level in Korea would be helpful for Korean students' engineering studies?

Very much	☐
Fairly	☐
Rarely	☐
Not at all	☐

13. Which English curriculum do you think would be the best for engineering students **at university level in Korea**?

N.B. UG takes normally 4 years and PG takes several years in Korea.

Please fill in the table given with appropriate numbers depending on three following possible programmes. You need not include all three programmes, can choose more than one programme for each level, or can leave blanks if it is unnecessary.

English Programmes
(1) General English: *Grammar, Pronunciation, General Communication skills, etc.*
(2) General Academic English: *General Academic Skills such as Presentation, Thesis Writing, Textbook Reading.*
(3) Specific Academic English: *Concept of Engineering Subject Terminology, Disciplinary convention, etc.*

UG	Year 1	
	Year 2	
	Year 3	
	Year 4	
PG	MSci / MEng	
	MPhil / PhD	

13-1. Please give reasons for your answer.

Appendix V: Questionnaire for Lecturers in the UK

Academic Needs Questionnaire

Please complete this questionnaire which is going to help in a research about **Academic Needs in English** of **Korean postgraduate engineering students.**

Please tick (✔) one box/ boxes in each section or write words/ sentences as appropriate.

A. General Information

1. (Name):
2. Institution:
3. Department:

4. Which courses of Korean postgraduate engineering students have you supervised or had any relationships with for academic purposes?

MSci / MEng course	☐
MPhil / PhD course	☐
Post Doc	☐

5. How long have you supervised or had relationship with Korean postgraduate engineering students?

6. How important do you think English is to your Korean postgraduate students in supervising or teaching them?

Critically important	☐
Fairly important	☐
Rarely important	☐
Not at all important	☐

6-1. Please give reasons for your answer.

B. Language Skills/ Study Skills

7. Of the four major language skills, which are the most important **for your postgraduate level Korean students to succeed in their engineering studies**? *(Please rank them in order of 1~4. 4: the most important, 1: the least important.)*

Reading ☐
Writing ☐
Speaking ☐
Listening ☐

7-1. Please give reasons for your answer.

8. For each of the following **study skills** in relation to study situations/ activities, please mark under the appropriate heading depending on **how important** you think they are in engineering. Tick (✔) the appropriate box according to the scale.

Study Situations	Study Skills Needed	Critically Important	Fairly Important	Rarely Important	Not at all Important
1. Lectures / Talks	1. Listening and understanding				
	2. Note-taking				
	3. Asking questions for repetition, clarification and information				
2. Seminars / Conferences	1. Listening and understanding				
	2. Presenting own works				
	3. Asking questions				
	4. Answering questions; explaining				
	5. Organizing whole discussion or activity				
	6. Note-taking				
	7. Taking part in Debates				
3. Tutorials / Supervisions	1. Listening and Understanding				
	2. Speaking with(out) notes: Reporting orally				
	3. Note-taking				
	4. Asking Questions				
	5. Answering Questions; Explaining				
	6. Taking part in debates				
	7. Personal meetings with supervisors				

Study Situations	Study Skills Needed	Critically Important	Fairly Important	Rarely Important	Not at all Important
4.Practicals / Laboratory work / Field work	1.Understanding Instructions				
	2.Asking Questions and Requesting help				
	3.Recording Results				
	4.Reading and Understanding Manuals.				
5. Private Study / Reading Literature	1.Reading efficiently: Comprehension and Speed.				
	2.Understanding and Analyzing Graphs, Diagrams, etc.				
	3.Note-taking and Summarizing				
6.Reference Material / Library Use	1.Using the Contents / Index Pages				
	2.Using a Dictionary Efficiently				
	3.Using a Library Catalogue on Cards, Microfiche and Computer				
	4.Finding Information Quickly				
	5.Collecting Information				
7.Writing Essays / Reports / Projects / Dissertations/ Thesis / Research papers	1.Making a Topic Decision				
	2.Outlining Chapters				
	3. Planning, Writing drafts, Revising				
	4.Summarizing, Paraphrasing and Synthesizing				
	5.Continuous writing in an academic style				
	6.Organizing Information Logically				
	7.Using Quotations, Footnotes, Bibliography				
	8.Using Charts, Tables and Diagrams				
	9. Drawing Conclusions				
	10.Plagiarism Avoidance				
	11.Connection and Transition of Sentences				
8. Research	1.Using social Net Works and Resources				
	2.Undertaking Surveys				
9.Written Examinations	1.Preparing for Examinations				
	2.Understanding Questions / Instructions				
	3.Writing Quickly: Pressure of Time				

Study Situations	Study Skills Needed	Critically Important	Fairly Important	Rarely Important	Not at all Important
10.Oral Examinations	1.Answering Questions: Explicitly, Precisely				
	2.Explaining, Describing, Justifying				
11.Generally Applicable Skills	1.Logical Thinking: Constructing Arguments				
	2.Accuracy; Stating Problems clearly; Making their own Opinions or Claims clearly				
	3.Memory: Recall				
	4.Using Computers				
	5.Subject Specific Terminology				
	6.Frammar and Expression				
	7.Pronuncation				

8-1. Are there any other comments that might be helpful in assessing what **study skills** Korean PG engineering students need in general and what specific difficulties they encounter in Engineering academic situations?

C. Impact of Different Academic Cultures

9. Do you think the academic cultures between you and Korean engineering students are different in your engineering academic context? Please give reasons for your answer.

10. If you have had any problems because of the **different academic cultures** between you and Korean students, please describe them.

D. Specific English Programmes

11. Are you satisfied with English levels of Korean students for their engineering studies?

Very much ☐

Fairly ☐

Rarely ☐

Not at all ☐

11-1. Please give reasons for your answer.

12. Do you think that a specific English programme to improve academic English at universities in Korea would be helpful for Korean students' engineering studies?

Very much ☐
Fairly ☐
Rarely ☐
Not at all ☐

13. Which English curriculum do you perceive would be the best for Korean engineering students **at university level in Korea**?

N.B. UG takes normally 4 years and PG takes several years.

Please fill in the table given below with appropriate numbers depending on three following possible programmes. You do not need to include all three programmes, and also can choose more than one programme for each level or can leave blanks if it is unnecessary.

English Programmes
(1) General English: Grammar, Pronunciation, General Communication skills, etc..
(2) General Academic English: General Academic Skills such as Presentation, Thesis Writing, Textbook Reading, etc..
(3) Specific Academic English: Concept of Engineering Subject Terminology, Disciplinary convention, etc..

UG	Year 1	
	Year 2	
	Year 3	
	Year 4	
PG	MSci / MEng	
	MPhil / PhD	

13-1. Please give reasons for your answer.

Appendix VI: Interview Questions for Students

A. General Information

1. What is your name?

2. Department?

3. Which course are you taking (M.Sc., Ph.D., or Post Doctor)?

4. (How long have you been in the UK?) How long have you studied your subject? What is the goal of your current subject study? Any plans for future study?

5. How important do you think English is to your current study? Is it critical or not?

B. Language skills/ Study skills

6. Of the four major language skills, which are the most essential to success in your study? (Reading/ Writing/ Speaking/ Listening) Why do you think so?

7. Which study skills are important for your academic success? Do you have any difficulties with the study skills? What are your strategies for your study? Please comment on that.

C. Impact of different academic culture

8. Have you ever had problems because of the impact of different academic cultures in Korea and the UK? e.g. Social interaction between supervisor and students, Culture of learning and Attitude in the classroom.

D. Possibility of Institutional Change of English teaching and learning

12. Have you ever taken part in organized learning activity either in the U.K. or Korea to develop language skills/ study skills for your specific study? Are you satisfied and does your supervisor seem to be satisfied with you in doing your course now? How do you think English teachers could support your needs?

13. (Do you think specific English programmes such as pre-sessional course or science specific English course in UK universities were beneficial to you?) Do you think that a specific English programme to improve Engineering students' academic English in university level in Korea would be helpful for your studies? Which English curriculum do you think would be best for you in Korea?

Appendix VII: Interview Questions for Lecturers

A. General Information

1. What is your name? Nationality?

2. Department?

3. Which course Korean students have you supervised or taught so far? (M.Sc., Ph.D., or Post Doctor)?

4. How long have you taught engineering? Could you briefly introduce your academic and professional career?

5. How important do you think English is to your Korean students in supervising or teaching them? Is it critical or not? Are you satisfied with communication with them? Can you give some examples of communication breakdown? As a teacher, are you well aware of the language problems? What aspects of the English language do you think they might feel most difficult in connection with their studies?

B. Language skills/ Study skills

6. Of the four major language skills, which are the most essential for (Korean) students to succeed in their studies? (Reading/ Writing/ Speaking / Listening) Why do you think so?

7. Which study skills are important for your students' academic success? Please comment on this issue.

C. Impact of different academic cultures

8. (Have you ever had problems because of the impact of different academic cultures between you and your Korean students? e.g. Social interaction between supervisor and students, Culture of learning and Attitude in the classroom. How great was the cross-cultural misunderstanding between you and Korean students in your academic context? What is your strategy to overcome the cross-cultural misunderstanding?) Do you think students might have cultural problems when they study in English-medium lectures, present at international conferences, or take part in collaborative project with foreign engineers?

D. Possibility of Institutional Change of English teaching and learning

9. Are you satisfied with your students' English proficiency in doing their course? Have you recommended students to participate in English language programmes during their postgraduate courses? How do you think English teachers could support students' needs?

10. Do you think specific English programmes such as pre-sessional courses or science specific English courses at the college are beneficial to Korean students? Do you think that a specific English programme to improve Korean students' academic English at the university level in Korea would be beneficial for their studies? Which English curriculum do you think would be best for them in Korea?

Appendix VIII: The Invitation Letter to Lecturers for Survey

24th, July 2003

20 Bedford Way
London WC1H 0AL
Institute of Education London University

Dear **Dr. A,**

I am a research student in *the Communication, Language and Culture* Department at the Institute of Education London University and working with Dr. Catherine Wallace. I am currently doing some research for my thesis in relation to **Language/ Study Skills, Cross-Cultural issues** and **Needs of academic English of Korean Engineering Students** in **UK Scientific Academic Institutions**, with special reference to **College U.** I was wondering if you might complete a short questionnaire attached in this mail and return it to me. Any information you provide would of course be used in the strictest confidence. It would be enormously helpful for **the academic improvement of non-native Engineering Postgraduate students' communication in Science and Technology fields** as well as for my study. I look forward to hearing from you and really appreciate all your help.
Thank you very much.

Best regards,

Inyoung Shin (Yoo).
Research student
Institute of Education London University

Appendix IX: Examples of Transcribed Interview Scripts

KL-1, Mechanical Engineering at College K in Korea (30th December, 2002)

(K: KL-1, I: Interviewer)

K: I've worked for the KAIST for 17 and half years and I worked at the Clarkson University, which is the small engineering college, northern part of New York, for 10 years. I took my PhD at Rutget's University and later on we moved to New York.

I: Is English important to Korean Engineering students?

K: As far as Engineering students, especially postgraduate students, textbook and all literature, nearly 100 %, are written in English and all dissertations or thesis for degrees are nearly written in English. As well as during the course, even after the course, for their professional career, English is essential and the most crucial component. For UG level students, it is important to read English texts well and efficiently more than that. For PG level students, merely reading skill is not enough and they need to express their research and work they've done not only by speaking but also by written form of literature, journal and conference proceedings. The essential component is writing and expressing herself / himself by using systemic, clear and straightforward manner.

Especially for PG students, English is an absolute factor, about 100%, for their academic success. If they can't use English well, even though they can do well in Engineering subjects, they would suffer a lot as their works or achievements cannot be shown or highlighted at all. These situations are getting more significant recently. Most dissertations and thesis, about more than 90 %, are currently written in English in mechanical engineering department.

It has been said that the number of lectures spoken in English should be increased at KAIST. As far as I'm concerned, considering this is very important issue, I have already given lectures in English, since 15 years ago. About 3 years ago, Dr, Choi Jae Gyun, the principal of KAIST, and I proposed that at least 10% of lectures in PG levels should be offered in English and currently we are keeping the ratio. There are about 50 lecturers in this department and at least 5 lecturers including me are giving lectures in English. Maybe in the future, the percentage will be increased more and more.

I: What about the degree of students' understanding?

K: Students who come to my class already knew that I give lectures in English. The number of students who seem to understand the contents and consider the lecture in English effective are getting increasing. In the past, students tended to escape to listen to English lectures, but nowadays no one would escape lectures only because they are spoken in English. Even if they will spend hard time to follow up the lectures, they seem to feel that the lectures in English are helpful for some learning effects.

When I meet my Korean students personally for supervision, I don't speak English, but I have

other foreign students, for example, I have at the moment a Russian post doc student in my laboratory and in the past I had a Polish student. In that case, there is no other tool for communication except English.

In the experiments and practicum, which mostly assistant lecturers deal with, English is not mostly used, but the terminology is in English.

We are teaching high level, highly qualified, elite postgraduate students. As a rule, they are supposed to present their results at open international conferences specialized in Mechanic Engineering or Fluid Mechanics. Of course they have to write their proceeding papers and presentation proceedings in English. There is no doubt about that. They do have a great deal of anxiety and apprehension about that presentation capability and skills so on. That is crucial. In order to become a researcher of international reputation, you have to build that stage. If you don't go through and if you stay on the domestic market, the domestic stage alone, you can't become an international researcher. It is not only important, but it is absolutely essential. If you have that sort of training, or that sort of practice, which I said a number of times as crucial, it will decide if you are going to be a good researcher or not. Not because of technical skills but because of students' lack of sufficiency of English. That becomes what a good or lousy researcher so that is very important... and also nowadays in engineering you have to be familiar with outside world. You're not going to be in an absolute Korean world. You're have to be in an absolutely non-Korean world, in the worldwide market, worldwide stage. Not only technical presentations but also casual conversations; making friends, getting acquainted, and so on, have to be in English as a communication tool. In addition, our outcomes should be published in international journal and media. In doing theses, English is only medium.

Study method or academic attitude is not directly related to English education, I think. How to study, whether it is by English way or Korean way, is little relationship with English proficiency.... Korean students don't seem to take part in socializing many times with other foreign colleagues. However, we will do well our technical presentation, thesis writing, comprehending somebody's works, although we do much socializing. Someone who does well in socializing is not always likely to do well in technical works. It can be indirectly affected, but little directly related. The attitude to study alone and find out knowledge in sticking into books without asking others may not be helpful to develop English proficiency, but it does not meant that the attitude is directly related to English proficiency. It is necessary for students to read many good standard samples of technical writings and texts and write in well organized way or practice by themselves. Socializing would help to improve how to express and say orally and how to listen to somebody's thoughts. But I don't know how exactly they are...

There is very little chance of technical writing to be related to cultural differences. Most of all engineering materials are written in English from British or America in any countries in the world. So materials are not related to cultural effects, I think. My Polish student and previous

Russian student did not have any difficulties because of cultural differences. When I taught in Japan, I did not feel the cultural gap there either.

Of course the general English courses have to some extent of help for engineering students. But it is not specifically directed to engineering students. In that sense, the usefulness is limited. We are not doing about literatures like human relationship, lovers, movies, music, something like that. 'Being technical' means very dry and very short, straightforward sentences with clear cut. There should be no misunderstanding in technical writing, technical listening and technical materials and so on. 'A is B', 'A is equal to B', 'The reason of A appears B', that sort of things. We are talking about stating facts, observations, trying to impart in physical mechanism, trying to justify my explanation and interpretation. These are technical, dry and non-liberal English. Of course, we need to have general ordinary English to make friends. Our general English education in UG level deals with general English, but our writing does not have repetition or beautiful expressions. Scientific reports have to be clear, concise to get the point. For PG level students, to go to international conferences, international situations, comprehending somebody else's idea, general English is not so important, although it can be basic…

Of course, it will be a problem how technical English courses operate the class effectively. Nowadays English is a weapon especially for engineering and science students. Sometimes we see students were penalized because of his lack of comprehension of English. If he cannot be presented effectively in international conferences or journal publications, he is easily really penalized. Only because he does not have sufficient English proficiency, he has to cry, suffers terrible loss and injustices in some sense. It is really big issue to us how we train engineering students and scientists in English, technical English, perhaps. They can fully express their ideas, their thought and results. So they wouldn't be penalized. In Japan or Germany, they are non-English speakers, but their domestic market is big and large. So Japan and Germany have huge stage of mechanical engineering to play. All other nations in the world except Japan and Germany have to go through painful part of learning English. Otherwise their work will not be read and understood by outside people. Japan and Germany are exception. As I said, their domestic market is big enough. So we Korea are small nation of Asia. So it's like people in Denmark or Netherlands or other small countries. They have to know and learn English. Otherwise if people write down their idea in Danish or Swedish, it will be dead. Nobody will see that anyway. By the same token, we Korea have to do it. So English is absolutely necessity. The question how we are going to train young people is not easy and it will take time. I am emphasizing and concentrating technical English. We are not talking about Shakespeare or Hollywood movies. It is rather dry, concise, straightforward, specific technical English.

Majority of students have suffered some disadvantage due to their lack of English speaking skills in presentations. For the early stage, they go through the procedure, but they shouldn't stop there, they need to try one more time to do better. They need to experience such a process.

Both engineering subject knowledge and English proficiency are important. Anything cannot be ignored to be a good engineer. There is no doubt about that both are equally crucial... Pronunciation is in a sense a secondary issue. Even if pronunciation is bad, if he/she can express his/her opinion simple and precisely, it will be all right. If pronunciation is good, then it's much better. But priority is clear and concise expressions of their main ideas.

We are dealing with dry and precise English. We need to read and understand simple and concise professional knowledge and write as it is shown. That is our aim and necessity. So we are different from general people. The important thing is how efficiently and how fast students are be able to read and present and write technical engineering English, not general English like Shakespeare. If we can do all with plenty of time and energy and money, it is much better, but that is impossible in limited situation. We need to concentrate, narrow down and dig away at our studies.

If we can do technical English very well, we can to general English as well. Both are not against each other. But for the matter of how efficiently we can do, technical English is a much effective tool for students.

UL-1, Mechanical Engineering at College U (14th January, 2003)

I: This is for non-native students.

U: OK. Non-native means overseas and European?

I: Yes. That is, not British native speakers.

U: OK.

I: I was a Chemisty student and researcher in Korea and well aware of science students' needs in English for their academic purposes. Actually I did some research for Korean science students as part of master course and this time I would like to know lecturers' views on students' English problems and needs.

U: No problem.

I: Which course Korean students have you supervised or taught so far?

U: UG. I am sure I have some, but sometimes I don't know how to distinguish them. I am sure I have some Korean students, but I don't know how many and I cannot remember any specific case. For PG, I have J, Korean. He was an UG here as well. So I only have one Korean. Many overseas, but one Korean.

I: I see. How important do you think English is to your Korean Engineering students in supervising or teaching?

U: In teaching UGs, Um, it's of a medium importance, because I think the interaction with students normally needs to be started by the students, asking a question, not is the problem. You don't know their language potential. They later talk. And they tend to come to me with questions. So lecturing, I don't know who understand. Tutoring, only when I ask a question. I

rarely ask questions. I lead them ask me questions. I solve problems. When I teach in tutorial and lecture, it is important but I don't know their capability. In supervising UG in project, it is very important, cause they have to understand what they are doing and you have to give them specific task. So it's very important in supervision and mainly for them to understand what I want. For me to understand what they want is relatively easy, because I can see the results, what they've done, and equations. Therefore language is less of the problem. Problem of supervising is they don't understand what I want. I think I can understand what they've done, because understanding what they have done can be put on piece of paper in writing. For PhD students, it's absolutely essential. It would be medium good to be a PhD student.

I: Are you satisfied with communication with them?

U: Yes. I can't remember any case of difficulty. Good. Good.

I: We usually guess, in science topic, English is less important.

U: I think that is true, because again you can put the ideas into paper. Because it is science job, you can see the experimental data, you will know what they've done. So it's easier.

I: Right. Can you give some examples of communication breakdown?

U: Ur. One example is UG in tutorial. They asked questions and I was trying to explain something to them and they just agreed with you, but you know they don't understand it. That is a complete breakdown. There is nothing one you can do. They just agreed with you and you assumed that they understand you, but you knew that they don't understand you because of their eyes, reactions and what they are saying. That is complete breakdown. In supervision, I don't think I have ever breakdown of communication. A lot of misunderstanding happens to me in many languages. The more misunderstanding is not language related, but conceptual misunderstanding. It happens to Home students. I can say many examples of conceptual misunderstandings. But very few of language misunderstandings. As a more personal matter, I have examples of attitude problems. The way I behave is not offensive, but it is slightly misunderstood, not conceptually, but by the behaviours. That could happen in other languages. That could happen in my case more between men and women as well because of characters. They tent to get upset easily. But I don't think language is major issue.

I: As a teacher, are you well aware of the language problems?

U: Yes. I think within one minute, I know there are language problems. It's quick. To tell the truth, I don't take students with language problems to be PhD. For UG, I have no choice. For PhD, I won't, because I can't get through.

I: Right. What aspect of the English language do you think they might feel most difficult in connection with their studies?

U: Attitude is important one. I think an aspect of cultural understanding and the way of British education system is an aspect of cultural behaviour. And I will give you an example on it. Let's say you have a problem base course, where you are solving problems, generally it is the way of

learning. Many times the problems we have set have a clear answer and numerical answer. It's one unique solution. That is very pleasing to people from far-east because they are trained to solve numerically problems and to get a unique answer. There are a lot from Singapore and Hongkong and some Korean. I know that they are not same culture, to us but it appears to be similar. They are closer than European culture. So they do that very well. When they come to problems that we don't know the answer too, and there are maybe many answers, open-ended problems, they don't like it. They don't do well. It is the cultural issue. British students have been trained from A levels to O levels to understand that sometimes you don't have answers to the problems. And they quite prepared to try many things. But it is not the case in far-east students.

I: Of the four major language skills, which are the most essential for Korean Engineering students to succeed in their studies?

U: In UG, reading and writing are more important than speaking, probably, because you are in exam situations, you can not understand exam paper, you misunderstand the exam, the question, you are in trouble. We have questions sometimes works have not been seen before, because we have to think of exam questions which are different from previous year and there are some nut and balls and number of names that overseas students might never have seen before. When it comes to supervision, writing and speaking are most essential, not so much than reading.

I: In relation to writing/ reading, which study skills are essential for your Korean students' academic success?

U: Again if you come to UG, reading and citing books and works people have done are important. If you come to PhD, it is important to put their works into their own words, e.g. I have done such and such an experiment and outcome of the experiment is x, y, and z. That is, writing an article, writing their own ideas are important.

I: In relation to speaking/ listening, which study skills are essential for them?

U: I think listening lectures and comprehension, and taking note about what you are saying are important in UG. The second aspect of UG is talking in a group in English, discussion, not necessarily with native speakers. Two aspects are important. For PhD, oral skills, when they see the supervisor, they need to understand what supervisor is saying. Developing these skills with listening and comprehension as well as being able to debate are important skills for PhD students.

I: How great cross-cultural misunderstanding between you and Korean Engineering students in your academic context?

U: I think it's a matter of experience. The more you are in this job, the better you are. I have learnt to understand more and more different cultures. I behave slightly in different fashion for different students. I learn that skill to treat them in different ways, because they are different. But it is important issue and you can create difficulty, but as long as teacher is flexible enough

to accommodate cultural differences, then there shouldn't be a problem. I am also foreign speaker myself, therefore I have greater appreciation of the difficulties students go through. I learnt English as a second language.

I: When did you start to study in England?

U: In 1985, when I was 19 years old, I began UG here. I never left this country. I have an appreciation of what sort of difficulties they have.

I: Have you ever had problems because of the different perceptions of classroom/ academic cultures between you and Korean students?

U: Minor problems.

I: Especially for Korean students?

U: I don't think so. I think they want to appear to please the teacher too much. That is common problem. Different from Chinese or Japanese. They want to please teachers.

I: Are you annoyed by that?

U: No. I don't think they learn because of that. But in order to learn, you've got to put yourself in that situation that is not controllable. So you can develop your personal learning. Learning will not happen in controllable environments. I think you have to allow the possibility of being embarrassed. I found Korean students don't want to be embarrassed. I understand, but that is not common to other cultures. That is cultural issue that I can see. They are not prepared to be embarrassed because embarrassment is not acceptable to their culture. But British students many times say to me I don't understand anything. They are quite happy to acknowledge. They are pretty useless. I think that is specific issue. As a teacher, you don't know how much they know. That is complete breakdown because you are not prepared to say what they don't know, even though they are good. I think Korean students are extremely polite. Sometimes you don't know what they think. I don't embarrass anyone, but sometime student need to learn by mistakes, but they are not prepared to accept mistakes, therefore they cannot learn. They learn outside and they go somewhere to learn. The other extreme is British students who is stubborned with the wrong ideas. That is the worst thing. I don't like it. Some say I am right, you are wrong. They insist to challenge me in public with lack of respect. I would say that is worse than being polite. I am talking two extremes. Most student fall into mediums. So their code of conduct is different, rule of conduct depending on nationality are different. In Korea, there are not a problem, because everybody behave in a same way.

I: If Korean students are really polite and do not want to express their own ideas, what is your strategy?

U: Put it in writing and show it to me. If nothing comes out, you misunderstand them.

I: Do you think specific English programmes such as pre-sessional course, science specific English courses in UK universities are beneficial to Korean Engineering students?

U: I used the programme when I was 18 and it did a lot of good to me.

I: Do you think it would be helpful for Korean students as well?

U: I think so.

I: Do you think through the programme, not only language/ study skills but also cross-cultural understanding would be developed?

U: There is a problem, which is depending on teacher. I must say we teachers are not sometimes very good. We have to accommodate. Teachers of Language support to higher education must understand and accommodate with the culture, that is, we have to accept the differences of understanding and nationality. Otherwise over polite individual does offend and not useful and waste of time. It doesn't work.

I: Do you think that a specific English programme to improve Korean Engineering students' academic English in university level in Korea would be helpful for their studies in the academic community?

U: Very helpful. Before coming here. Because they already have some background work. I think supporting and developing English ability itself in Korea is important. We cannot do that here. If they come here in UG, we assume that they understand English. We are giving no credit or penalty to those who understand or don't understand. We assume that all do. We don't give them no time, no credit, and no penalty. So they have to know. If PG students, I will give them some time for 2 or 3 months, I will not take him and I will say I am sorry. But it's never happen to me and they are always good.

I: Which English curriculum do you think would be best for them in Korea?

U: Scientific reading is essential if they remain in their institutions. But no scientists remain there. They go to conferences and they need to develop their oral skills and generally if they don't leave their countries, it will be difficult to learn English in their job in their country. They only have to speak English when they meet native speakers.

The only way to encourage is to take an extra course to get some credit, but I am not sure it can be compulsory. The most important thing is to learn English from secondary level as a compulsory and tertiary level as an optional course. I will not distinguish between General English and Science English. There should be medium, little bit literature and little bit of Science specific. If their English is reasonably good, then they might need some coughing in Scientific English.

UL-2, Mechanical Engineering at College U (21st January, 2003)

I: This is for Korean Engineering students, that is, for their academic development through efficient communication in Engineering department. Actually I was a Chemistry students and researcher in Korea and now I am studying English education. I am well aware of their needs in English for their academic purposes. That's why I am doing this research. I did some

research with Korean Engineering students as part of master course and now I would like to know lecturers' views on students' English problems and needs.

U: OK. So the intention would be to advise students working in Korea on what and how they should improve their English before perhaps coming to the UK to study? Or before becoming practicing Engineer's working with UK organizations?

I: Just for study purposes.

U: Just for study purposes. It's intention to help students prepare to come to England to study.

I: OK.

U: OK. I will get it.

I: Actually we don't have any specific English course in Korea targeting science academic English.

U: I see. OK.

I: I would like set up new English course in Korea and that's why I am doing this needs analysis asking lecturer's points of view.

U: I see. In that case, the point I would make straight away is that as I mentioned on the survey, I think, it's not that there is a lack of English which is specific to technical issues, I don't necessarily want students to know a lot of technical terms in English. That's not really a problem. What I want is simply for them to communicate, you know, a few technical terms are very easy to learn, what's more important is being able to sit down and exchange ideas with somebody, so it's just basic, it's really totally basic communication which is the most important thing. Technical issues are clearly important but you get to that after you sit down and have a conversation with somebody. So that's the most important thing.

I: I think you pointed out an important issue. You generally answered most questions already in the questionnaire. And can you give some examples of communication breakdown with you and Korean students?

U: The most common form, not necessarily an example of a single case but I can tell you how it happens. It happens when you sit down and have a conversation. You say OK what are we going to do? You can speak of research bit of activity in the laboratory and say what are we going to do about it. And I say I think you should do this XYZ and sitting where you are sitting and say OK We will do that and then go away and I will discover later that he/she haven't understood what I actually asked for but didn't simply say I don't understand what you want me to do. Can you explain it again? and they don't understand it but they accept it and go away without you know what they should do is to sit here grill me and say no I don't understand explain to me again, No, I still don't understand explain what do you mean by. But they say OK then, and go away. What happen to me is that they don't press me to find out what it was I wanted. Ur. That is the problem, serious problem. Having poor English is less the problem than that, the worst possible thing to do I think. I accept people from here to over the world and also

express the problems that English is problem yet over the time spending English would be better. That is you would expect. But the most important thing is to say you don't understand. But they tend not to do it. I don't know why. I can guess why he is. But I need to be more proactive in making people to explain things to me because we will, but they don't seem to ask for it.

I: Very interesting, as an engineering lecturer, are you well aware of the importance of the student's language?

U: Well, of course. No matter what subject it is, if you are not communicating, you got a very immense problem.

I: Some says English is not so critical, because if they know specific terminology, they can communicate easily.

U: I don't agree with that. I think there is no substitute to simply being able to talk to somebody. I think the terminology can almost disguise the lack of understanding, you know, we use the same words, we use right sounding words, but if you actually you are communicating properly with somebody. It's just back to all they are, they are just a collection of technical terms, you've got to be able to converse with somebody and exchange ideas and just knowing the technical terms unfortunately is not going to be enough, I don't think.

I: And you marked the language skills for UG level and PG level in order of importance. Why did you rank in that order?

U: OK, this section, OK…I think listening and understanding in lecture and discussion. I have made that number 1, the most important. If you could simply study engineering and learn engineering by reading a book then I wouldn't need to be in my job. I would do something else for living. So clearly the added value you get coming to somewhere like this to study is that people talked to you about the subject and explaining to you and that's the real value, and that's why I am being paid to do this job is to explain things to people so they get to understand what I am saying. Secondly, if you're acquiring knowledge, you need to be able to read the notes which you're given, textbooks, and the other things that you said here. If you could do this, that those two, if you could listen and understand, and, read and understand, then you're going to learn something you're going to acquire knowledge you are trying to acquire. Writing and speaking is demonstrating that you have acquired it. Obviously this is important because you're going to have to pass exams. But you have to get it on board first, you learn the information by listening and reading. You are demonstrating by writing and speaking. That's the rationale there, there is sort of a logical sequence and that to my mind is the sequence of importance.

I: In each following study situations/ activities, which study skills are required for students' academic success and which study skills are seriously lacked by Korean students? Any comments?

U: Well, you will find that the way the activities are co-ordinated is basically the same principle as I described it there. So I have the same things in mind. The all of things on your list are important but the things which seem the least important to me are things like being able to use the content index in the library. Clearly it would be nice to be able to do that, but if you're slow at doing something like that, it seems that you have to spend a little bit more time on it. So it's not critical. Things like attending lectures and obtaining information and that's critical, so that's the reason for that hierarchy and we could go on to the things that are not identified that seems to come across as a weakness. In every case the thing I highlighted is this: reluctance, to ask questions. Reluctance, to engage the academic tutors in discussions of subjects which they find difficult because that's, again, you're simply going to take notes and go away and study them. Why do I need to be here, I am only here so that I can be asked questions and that's the most important thing you get from the tutor and ask questions and get answers and understand them. I don't know that is always to do with lack of English skills. I think something cultural there. Many seem to be polite. No, I'm sorry. You haven't explained properly. I don't understand, and please explain it again. That probably seems to be impolite. But that's what you have got to do.

I: Next questions are about cultural issue. How great is cross-cultural misunderstanding between Korean Engineering students and you in academic context?

U: The interaction in the classroom is only cultural problems I have

That's fine. Respecting of any difference. The only thing that still have impact is reluctance to asking questions.

I: Are you annoyed by that?

U: No. Because I just think it's an opportunity. When he comes to apply to this course, he needs to pay a lot of money because of tuition, but he is not getting it. And it's waste of opportunity. That is we are here for. Clearly we are willing to do it. And they need to get advantages from it. All the students do that way. UK students as well. It could be better at doing that. These seem to be particularly reluctance sometimes.

I: Could you explain more about different classroom/ academic culture such as social interaction, culture of learning, and attitude in the classroom?

U: I haven't something particular impact other than that I already mentioned. Everything else seems to be fine. There is nothing which is detrimental to studying other than their lack of in-touching academics, sometimes. But we only think clearly there is cultural difference about to be. They don't have any impact I can see.

I: I you have serious cultural differences between you and your students, how do you manage it?

U: Never have one. I have never had serious cultural differences. You would notice the cultural differences better than me. Sometimes I don't notice it, but you probably have better idea of

cultural differences between the UK and Korea. I don't notice it. If I do, I will tell you about it.
I: Between many Asian people like Chinese, Japanese, or Korean, there might be cultural differences as well.
U: Yes, I am sure they do, but again I don't know what the differences are, so I don't notice it. The thing that I am saying about Korean students, i.e. reluctance to asking questions sometimes happens to working students in Germany from Saudi Aribia. That seems to be wrong common factor, but I don't have anything else.
I: Then it could be students' culture, not necessarily Korean students' culture.
U: Ye. It happens to UK students too. But it seems to happen more to students from East Asia.
I: Right. Do you think specific English programme such as pre-sessional courses, science specific English courses in UK universities, etc are beneficial to Korean Engineering students in developing language/ study skills an cross-cultural understanding for their Engineering studies?
U: Yes. You come here to study English. There are some cultural problems and differences you are going to have to tackle sooner or later. If you came to England to study English not only you are going to study English but also to be exposed to both cultural differences. That is clearly the best thing you can possibly do.
I: Do you have any suggestions of how English teachers could support their needs?
U: The only thing you have to make sure that the English teacher is English. You know, we don't suggest that other people can't speak English, but if you're going to tackle cultural issues as well, Korean teaching English would be less effective than an English person in teaching students English. So, the problem is you need to have an English teacher who can speak Korean, I don't know how many of those there are but if you have any intention to overcome language problems and cultural problems, you need to expose students to English culture.
I: Do you think that a specific English programme to improve Korean Engineering students' academic English in university level in Korea would be helpful for their studies in the academic community?
U: I think the most important thing is general English but if you can obtain a good level of general English and something specific to specific technical English would be helpful so the middle way, one bit of each, not the first one. You might argue that the first one is more important, so it's a toss-up but definitely not the last one. It's one of the first two.
I: So student's general English is all right. Specific English is good idea but if not-
U: General English is the most important thing.

UL-3, Mechanical Engineering at College U (22nd January, 2003),

I: How important do you think English is to your Korean Engineering students in supervising or teaching? Is it critical?

U: Uh. The English of foreign students is *the* most critical thing. If they don't understand what is said to them, then it's very very difficult to be successful. I can't express, I can't say strongly enough how important it is. To me I think reading and comprehension, listening, are critically important.

I: Could you give some examples of communication breakdown?

U: Lots of Korean students, certainly MA students, I found students often to say, " Yes, I understood something," in order not to be embarrassed, when actually they haven't understood something. And that is so frustrating. Actually that is not helpful to them and not helpful to me.

I: As an Engineering lecturer, are you well aware of the students' language matters in your subject area?

U: Yes. Particularly at the small group level or individual level, I am very well aware that people don't understand.

I: You marked that the most important language skill as reading, then in the order of listening, writing, and speaking. Could you give more explanation for that?

U: OK. The most important thing for undergraduate students is they have to be able to read and understand their lecture notes and books. The next most important thing is that they have to be able to understand lectures or things they have to do in classes. They also have to be able to do. All the assessment is done in writing. Almost the assessment is done in writing. So writing is therefore important. And speaking is important along the level of if they don't understand something, they need to ask clarification and they need to ask questions. For PG students, it is much more reading and then speaking, listening with the supervisor. Writing comes in a lot later.

I: You marked about study skills in relation to writing and reading very well in the questionnaire. Is there any comment on that?

U: What really matters is their reading, top priority. Students will get the most what they know, I guess, through reading lecture notes and books, and work examples. English is pretty critical there. We don't do lots of oral presentation, but there is some. But I feel that that can come later when it has to. I am talking particularly about PhD students which matters most. MSc students are same as UG students as far as communications are concerned. PhD students, reading, absolutely essential all the time. Making decisions are based on that reading certainly what to read and what not to read, drawing stuff out what other people have already done and deciding what to do. Throughout one-to-one contact with a supervisor, which is almost all spoken and listening. The most frustrating thing with student is, I think, talking to them one-to-one at PhD level, and then they agree to do something but they haven't actually understood, so they don't go and do it and they don't say that they don't understand.

I: Even PhD students?

U: Yes.

I: About cultural matters, of course you and Korean students have different cultural backgrounds. Have you even felt cultural differences between you and your Korean students in academic context?

U: I tend to find that the cultural differences Asian students are less hands on, less happy with getting their hands dirty in Engineering than our British students would be. That is very broad generalization, maybe I am fair. But I find Asian students tend to be happier with academic skills, reading, writing and mathematical deductions. They are less happy with practical skills. Maybe they are trying to separate truth out of more reading, but severe thing people don't understand is idioms and everyday speech. Both can be very difficult.

I: Have you had problems or difficulties because of the different classroom/academic cultures between you and your KESs in academic situations?

U: One Korean student was very offended once I told him he was going up on a red herring. He took that as great insult where just in English I just mentioned he was doing something irrelevant. That causes a bit of difficulty.

I: Do you think specific English programmes such as pre-sessional courses, science specific English support programmes in the UK universities are beneficial to Korean Engineering students in developing language/study skills and cross-cutural understanding for their Engineering studies?

U: I believe we have that programme, but it's not widely used. It's not students see it as a democratic failure that they have to use it. They don't use it. It's very unhelpful. The extra thing they have to do and have to fit in is knocking to do it. I mean I think I would really recommend is our students will get along side English students one-to-one just normal conversation practice, that would be the most helpful thing.

I: I see. Do you think that a specific English programme to improve Korean Engineering students' academic English in university level in Korea would be helpful for their studies?

U: I think just conversation classes, listening in English would be the most helpful thing. It is my belief that everything else comes from that. If you got to understanding conversation, it's the hardest thing. In reading and speaking, you can pick up.

I: Which English curriculum do you think would be the best for them in Korea? Please give reasons for that.

U: Again I think general English is much more helpful in variety of ways. But in specific English, I think you can pick up many specific terms. General English, just general practice and more experienced people could have before they came with more intensive course couple of weeks before came here would be very helpful. With UG level, lots of general English of reading and listening would be helpful, being able to express themselves and answer the questions. Perhaps they will have more technical, further courses, but I suspect you will pick up technical words anyway. With PG, the most difficult thing is in the first year, listening

comprehension. Reading comprehension tends to be better, because they can do it on their own speed. But listening comprehension is needed the most help. They can't speak at all at PG level study, particularly writing good English is becoming more and more important, because PhD is almost completely assessed by what is written. And a number of foreign PhD students need to rewrite these in English. It is a big issue.

I: Are there any comments about what English classes in Korea should do to better prepare them for Engineering subject courses?

U: As I said before, they need lots of spoken English practice with native speakers in really one-to-one. So maybe what I am saying could happen or does not happen when they come in England, they need to programme in some time, maybe in two weeks or a month just before they start for intensive English to try in an English setting. In my experience, learning language will be so much quicker in one-to-one. It's much better. You can't hide and you do have to work in English.

I: Thank you very much.

UL-4, Mechanical Engineering at College U (28th January, 2003)

U: We see Korean students in the master's class.

I: How important do you think English is to Korean Engineering students in supervising or teaching?

U: It is certainly important for foreign students to enter into the course.... They need to have a great amount of English, not only for understanding lecture material and supervisors but, equally importantly, to be able to communicate ...speaking clearly as communication with supervisor and fellow students. And also it's very important to PGs to be able to write a report, ...these on the project.

I: Is English critical in your academic relationship?

U: Sometimes, yes it is. I think if the standard of students' English are below a certain level, it becomes very difficult to communicate and convane write instructions for students and to understand what they are trying to communicate themselves. So it is very critical, but only up to a point. Above the level, I think it's acceptable.

I: You have two Korean students. What about your Korean students?

U: I cannot say about it. I only have two students. I really don't another involve in day-to-day teaching. I cannot really say. Judging from my tutor in previledge... contact with them, certainly one of them English is very difficult....

I: What about Engineering knowledge compared with English knowledge?

U:I don't have direct technical relationship, I don't have direct contact aspect. We will find out after exams. When we accept, we expect same level of knowledge of Engineering as other students we did. Otherwise we would not accept.

I: I see. Can you give me some examples of communication breakdown with Korean students?
U: With Korean students, I don't have any communication breakdown. In the past, I had a problem in communicating with a Chinese PhD student, because his English was fairly adventurous. But with time, his English has been improved by staying in the country and speaking the language. We tried to encourage students to take an extra class offered by Humanity, other evening or during lunch time, communication skills, spoken and written.
I: What do you think would be the more important, content knowledge or English in teaching and supervising?
U: You need to speak Language well to understand what has been taught, so that is first level. Beyond that, it is the subject matter, which is the technical aspect. I think that the minimum of English standard is required. We find that students are able to comprehend what we are teaching. The main difficulty is then communicating orally and in writing. That's where the difficulty is. But I think that the language doesn't seem to be a barrier in that absorbing amount of time.
I: You said that a certain level of English is crucial. What do you think is crucial, general English knowledge or specific English knowledge?
U: General.
I: There are four language skills; reading, writing, speaking and listening. Which do you think is the most important for Korean engineering students?
U: You can't say that one is more important than the other. Obviously, listening and comprehending are the first steps, but then communicating by speech and by writing is equally important in the engineering field. You can't work in engineering without the ability to express your opinions and your thoughts, whether by talking to colleagues or writing them in reports.
I: In relation to writing and reading skills, which study skills are important for your students' academic success? I have some examples of writing and reading skills. The followings are the study skills related to speaking and listening.
U: I would say all of them, in equal portions. I would't say one is more important than the other. Of course, listening is the first step because it is the ability to absorb what is being said. It that sense, I would say that is the most important. But the others are equally important to become an engineer. To become a proper engineer, you need to communicate either by speaking or by writing so they are equally important.
I: Of course, Korean engineering students and you have different cultural backgrounds. So have you ever felt cultural differences between you and your Korean engineering students in academic context?
U: Not on academic context. My experience with the Korean students is limited to only two or three months, so I cannot really judge in general. But I think that Korean students are not different on the whole as students in this college or elsewhere. They talk in the same way as

other overseas students. Of course, they are from outside the UK. So they react differently and they develop different things with their reports.

I: Could you tell me of any experience of cultural differences or of problems because of the difference between classroom cultures?

U: I think overseas students, especially Korean students tend to group together and socialize as a group which is different from the thing integrated within the British academic community.

I: Is that problematic?

U: I don't think so.

I: Is there any technical English specialized for Engineering?

U: No. Each subject - Engineering, or any Science - has its own terminology or jargon. And I think most of the words are from outside. I expect Korea has already come across these terms so I don't think they should have any difficulty in understanding subject terminology.

I: So you mean the most important thing is general English.

U: Yes, absolutely.

I: Some point out that English for Social Science and English for technical subjects are different.

U: Of course. They will be different. Of course, technical fields will concentrate on matters of fact and analysis. So the kind of English you use is perhaps a substract of wider English. In the arts, it's more general, it's more to do with opinion and imagination, etc. What I'm saying is in the arts, English becomes more important. I think it depends on which subject it is to tell which acquires more importance than in the technical fields.

I: Do you have any comments about what English classes in Korea should do?

U: I think usually the problem with Asian countries, not only Korea, but also Japan, China, etc., is the difficulty of pronounciation of certain words. I think it'll benefit to the students to come to study in the West to have lessons to train them to pronounce letters and words better.

I: You mean very general English.

U: Yes, general English is not insufficient.

I: Do you think they need to learn cultural ethics as well?

U: No, I don't think so. I don't think they need to be integrated into a culture. But I think to be able to communicate in English well is very important.

US-4P, Civil Engineering at College U (13th August, 2004) (S: US-4P, I: Interviewer)

I: How do you think about my questionnaire you did?

S: In the middle part about cultural impact, I am not quite sure that issue is directly related to English education and also that seems not so critical factor for me. I think problems are caused mainly due to language itself rather than cultural effect and I couldn't find anything to say in those questions.

I: I see. You pointed out very well, but in language education area, we think, language is closely related the culture and…

S: I know that as well, but in science and technology fields, we rarely think that problems arise because of cultural factor. We are usually concerned about mere knowledge transfer and information exchange.

I: If you think that in different way, there might be many cases related to cultural issues in your field like the relationship with supervisor or different study attitude, and so on.

S: But I really feel that the way of people live in the world is more or less similar, therefore I cannot see any cultural differences in my area.

I: In your academic field, what do you think about an English matter? Is it problematic or trivial matter?

S: Compared with other areas, in my field, English is not so problematic, but when more social relationship is needed, English seems to be very critical.

I: Don't you think social factors can also sometimes cause serious effects on academic area, e.g. in relationship with colleagues or supervisor?

S: Of course, there are those effects, I guess so.

I: Do you have any unfair experience because of English deficiency when social interactions are needed?

S: More or less, there seems to be some discrimination because we are not same kind of nations, rather than because of language problems. However if I take those kinds of problems too seriously, I think it would be the waste of time and energy and I tend not to think of the problems now. But in the future, if I have a job or need more social interaction than now, it will be critical problems for me.

I: Right. And among study skills, which is essentially important for you?

S: Any study skills that are related to English is essential for me.

I: Have you taken part in specific English course in IC?

S: I took a writing skills course at IC for a term.

I: Was it helpful for you?

S: Yes. I thought it's better than nothing. The course itself was very good for students' academic support. Even British students would feel helpful. However, unfortunately I guess the lecturer was not so efficient. Anyway it was good programme for me.

I: I see. Then have you taken that kind of course in Korea?

S: No. I don't think so.

I: If there is specific English course such as teaching academic writing, presentation skills in Korea, do you think it would be helpful in tertiary level?

S: Certainly. Nowadays the movement of globalization in Korea facilitates the importance of English in Science and Technology as well.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